FM STEREO/FM-AM TUNER
(ST-177R)

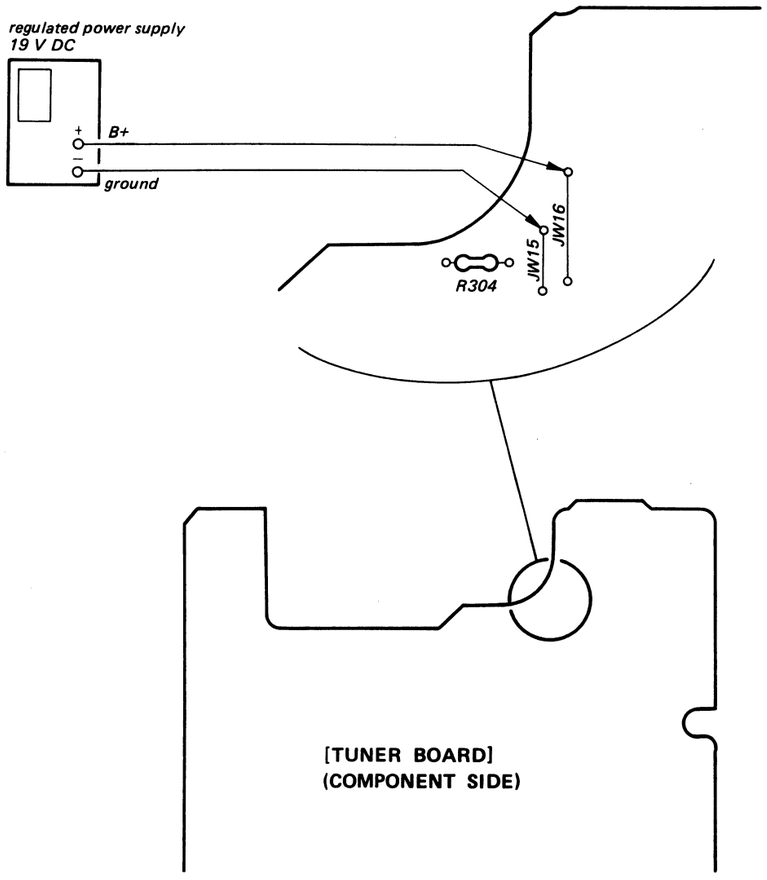
(AEP, UK model)

REPAIRING PRECAUTION

[To apply B+ voltage]

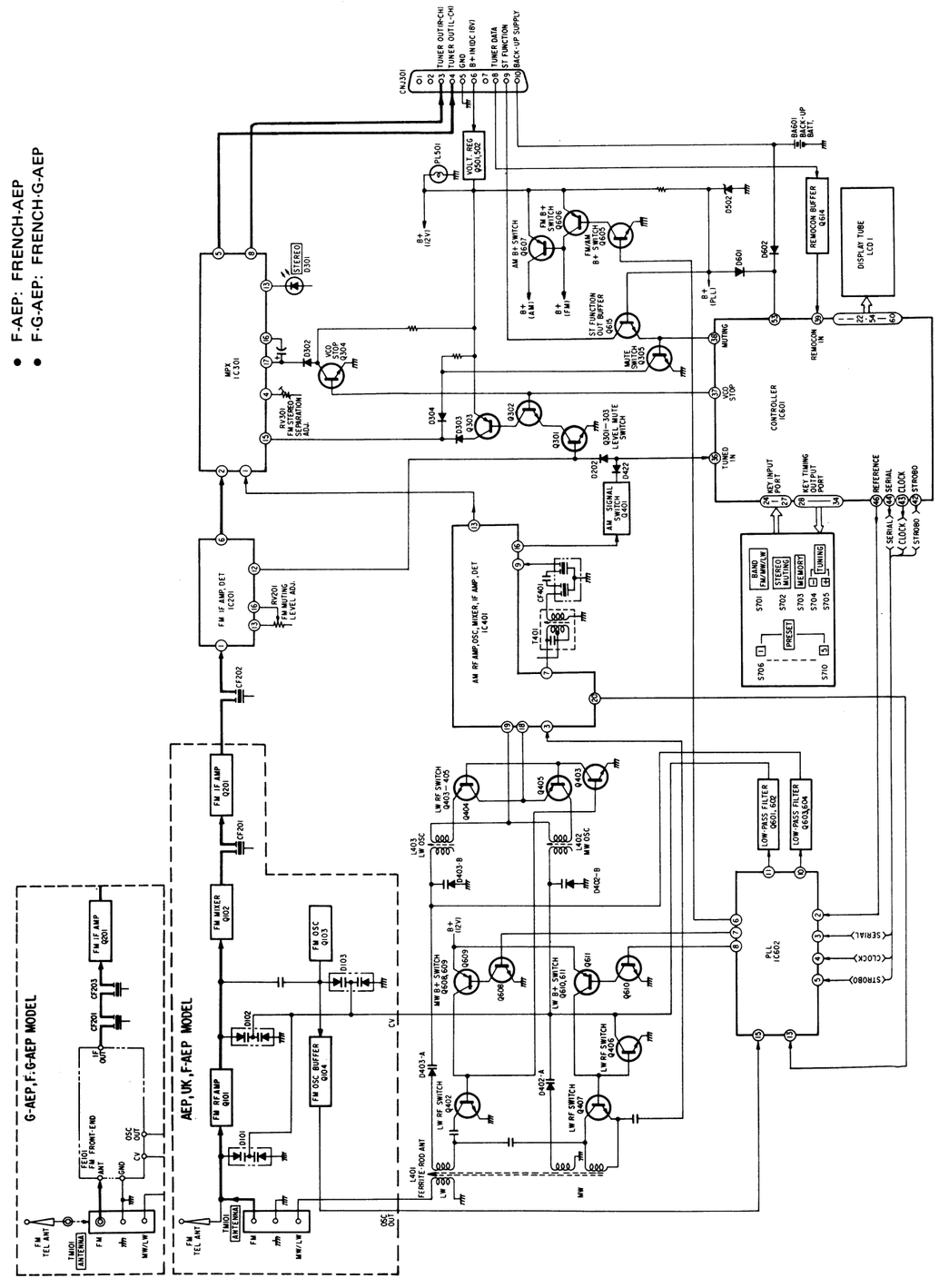
The power of this unit is fed from TA-177R.

Because of this, connect the regulated power supply as illustrated below when this unit alone operates.



SECTION 1
BLOCK DIAGRAM

Note:
- F-AEP: FRENCH-AEP
- F-G-AEP: FRENCH-G-AEP



FH-150R ST-177R (AEP, UK model)

SECTION 2 ADJUSTMENTS

FM SECTION 1

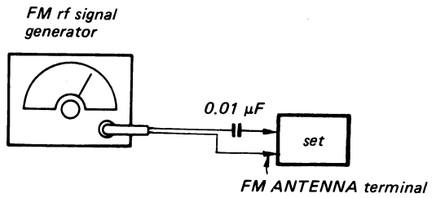
Setting:

BAND selector switch . . . . FM

G-AEP, F·G-AEP Model:
The FM front-end is carefully adjusted at the factory and is supplied as one whole block for replacement.

FM OSC Voltage Adjustment

Setting:

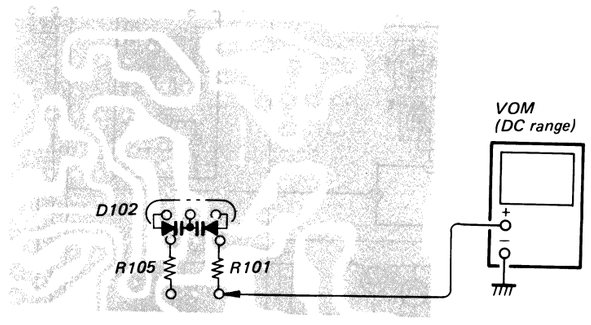


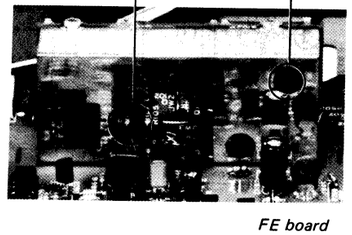
Carrier frequency: 108 MHz
Modulation: 1 kHz, 75 kHz deviation
Output level: as low as possible

Procedure:

1. Push the TUNING (+, –) button for 108 MHz.
2. Adjust L105 for 8.9 – 9 V reading on the VOM.

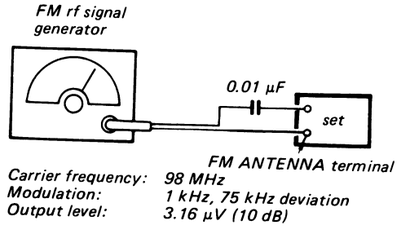
[FE BOARD] (CONDUCTOR SIDE)



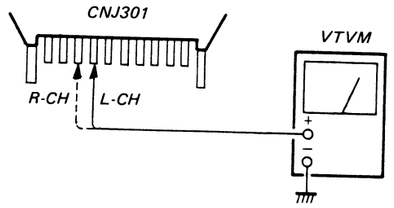


FM Tracking Adjustment
(Except for G-AEP, F·G-AEP model)

Setting:



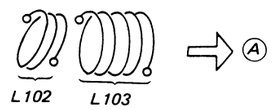
Carrier frequency: 98 MHz
Modulation: 1 kHz, 75 kHz deviation
Output level: 3.16 µV (10 dB)



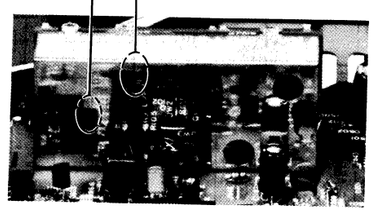
Procedure:

1. Push TUNING (+, –) button for 98 MHz.
2. Approach L102 and L103 not to contact each other.
3. Adjust L101 and L103, and repeat the adjustment 2 – 3 times for maximum VTVM reading.

(Adjust L103 in the direction as shown by arrow Ⓐ.)



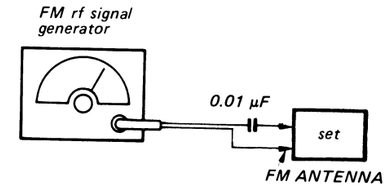
Note: *Do not touch L102.*
- F·G-AEP: FRENCH·G-AEP



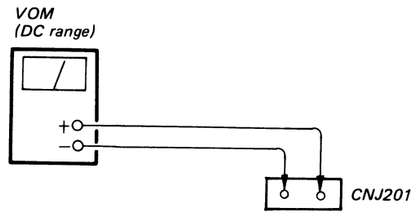
Note: FM discriminator alignment should be mode after FM tracking adjustment.

FM Discriminator Alignment (NULL Check)

Setting:



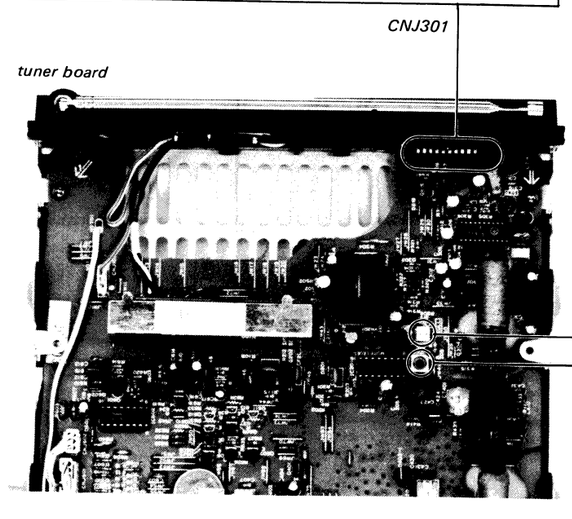
Carrier frequency: 98 MHz
Modulation: 1 kHz, 75 kHz deviation (AEP, UK, F-AEP model)
1 kHz, 40 kHz deviation (G-AEP, F·G-AEP model)
Output level: 1 mV (60 dB)



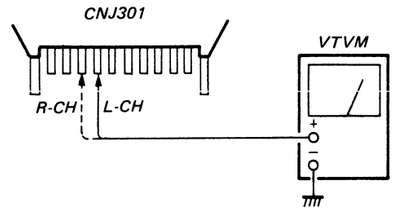
Procedure:

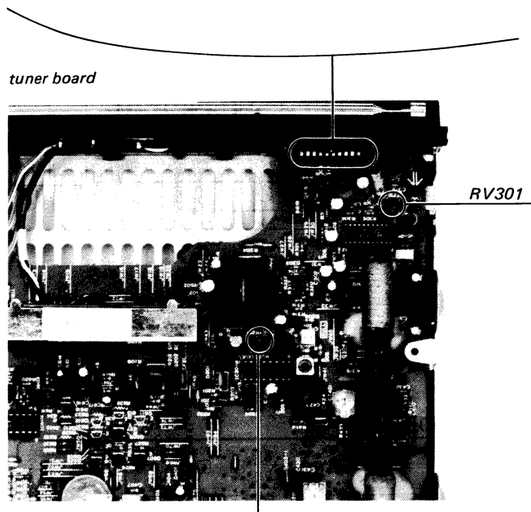
1. Push the TUNING (+, –) button for 98 MHz.
2. Adjust T201 for 0 V reading on the VOM.

Note:
- F-AEP: FRENCH-AEP
- F·G-AEP: FRENCH·G-AEP



FM SECTION 2

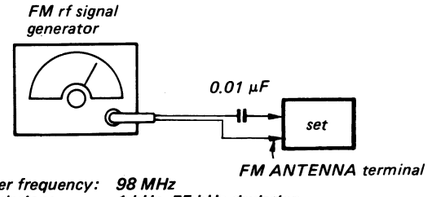




FM Muting Level Adjustment

Setting:
STEREO MUTING switch . . . . ON

Procedure:



Carrier frequency: 98 MHz
Modulation: 1 kHz, 75 kHz deviation (AEP, UK, F-AEP model)
1 kHz, 40 kHz deviation (G-AEP, F·G-AEP model)
Output level: 17.9 µV (25 dB)

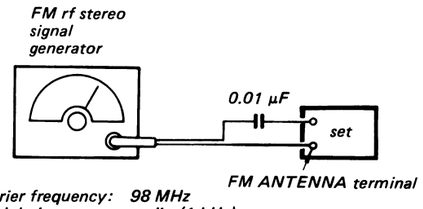
1. Push the TUNING (+, –) button for 98 MHz.
2. Adjust RV201 for a point the VTVM reading just drops to 0 V.

Note:
- F-AEP: FRENCH-AEP
- F·G-AEP: FRENCH·G-AEP

FM Stereo Separation Adjustment

Setting:
STEREO MUTING switch . . . . ON

Procedure:



Carrier frequency: 98 MHz
Modulation: audio (1 kHz):
33.75 kHz deviation (AEP, UK, F-AEP model)
20 kHz deviation (G-AEP, F·G-AEP model)
pilot (19 kHz): 7.5 kHz deviation
sub-channel (38 kHz):
33.75 kHz deviation (AEP, UK, F-AEP model)
20 kHz deviation (G-AEP, F·G-AEP model)
Output level: 1 mV (60 dB)
Mode: stereo

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RT301 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RT301 for minimum reading.

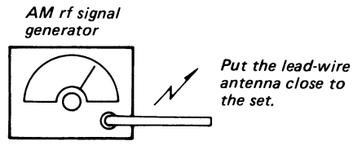
L-CH Stereo separation: Ⓐ – Ⓑ
R-CH Stereo separation: Ⓒ – Ⓓ

The separations of both channels should be equal.

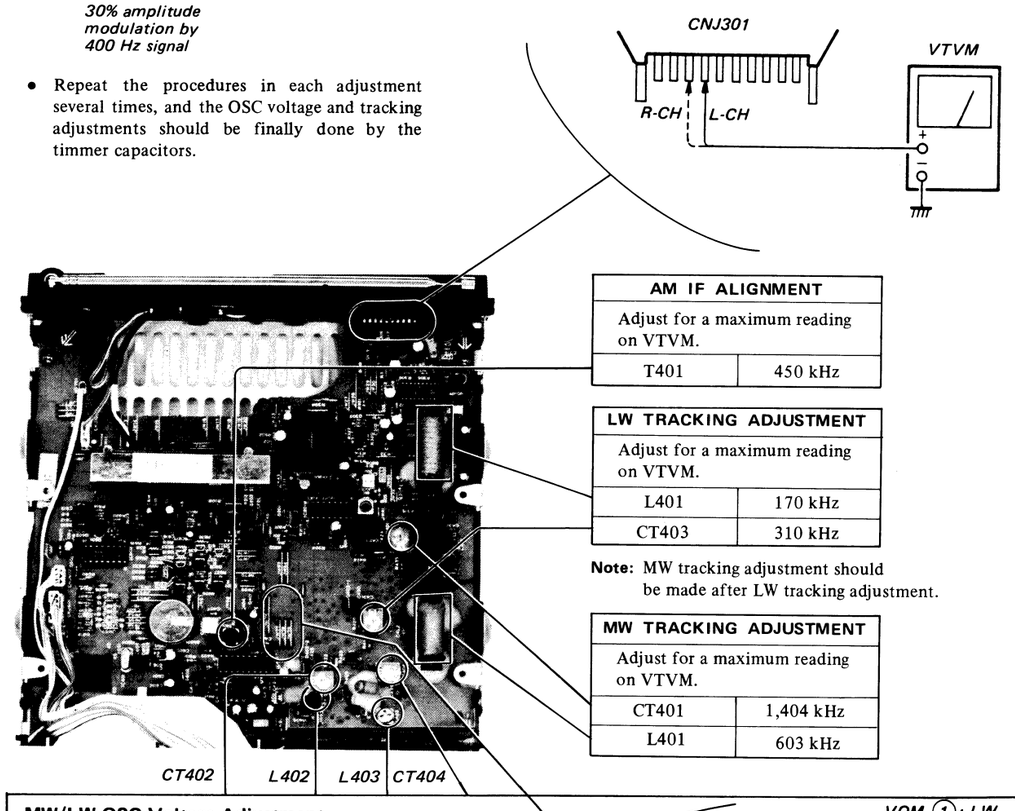
Note:
- F-AEP: FRENCH-AEP
- F·G-AEP: FRENCH·G-AEP

AM SECTION

Setting:
BAND selector switch: MW or LW



- Repeat the procedures in each adjustment several times, and the OSC voltage and tracking adjustments should be finally done by the timmer capacitors.



AM IF ALIGNMENT	
Adjust for a maximum reading on VTVM.	
T401	450 kHz

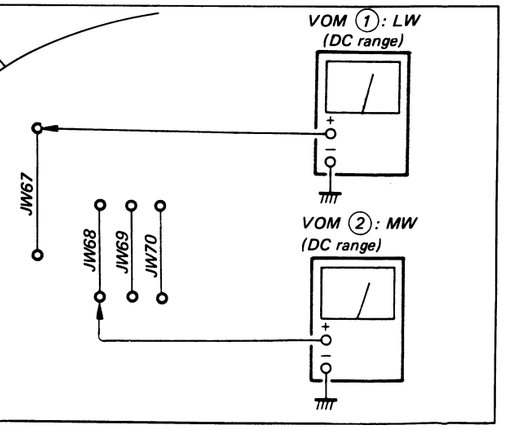
LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L401	170 kHz
CT403	310 kHz

Note: MW tracking adjustment should be made after LW tracking adjustment.

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
CT401	1,404 kHz
L401	603 kHz

MW/LW OSC Voltage Adjustment

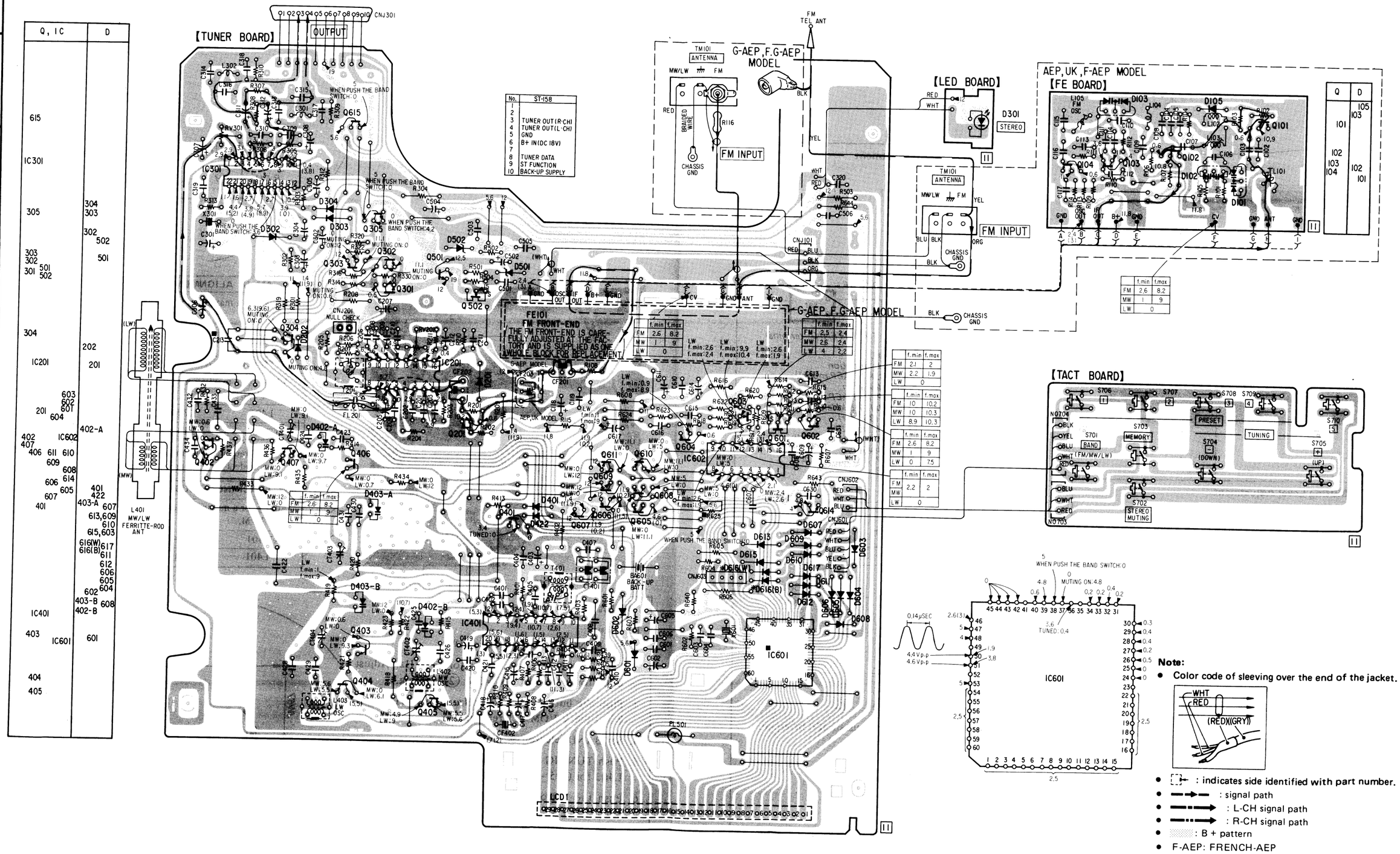
Procedure:
1. Set BAND selector switch to MW.
2. Push TUNING (+, –) button for 531 kHz. Adjust L402 for 0.95 – 1.05 V VOM ② reading.
3. Push the button for 1,602 kHz. Adjust CT402 for 8.9 – 9.0 V VOM ② reading.
4. Set BAND selector switch to LW.
5. Push TUNING (+, –) button for 153 kHz. Adjust L403 for 0.95 – 1.05 V VOM ① reading.
6. Push the button for 344 kHz. Adjust CT404 for 8.9 – 9.0 V VOM ① reading.

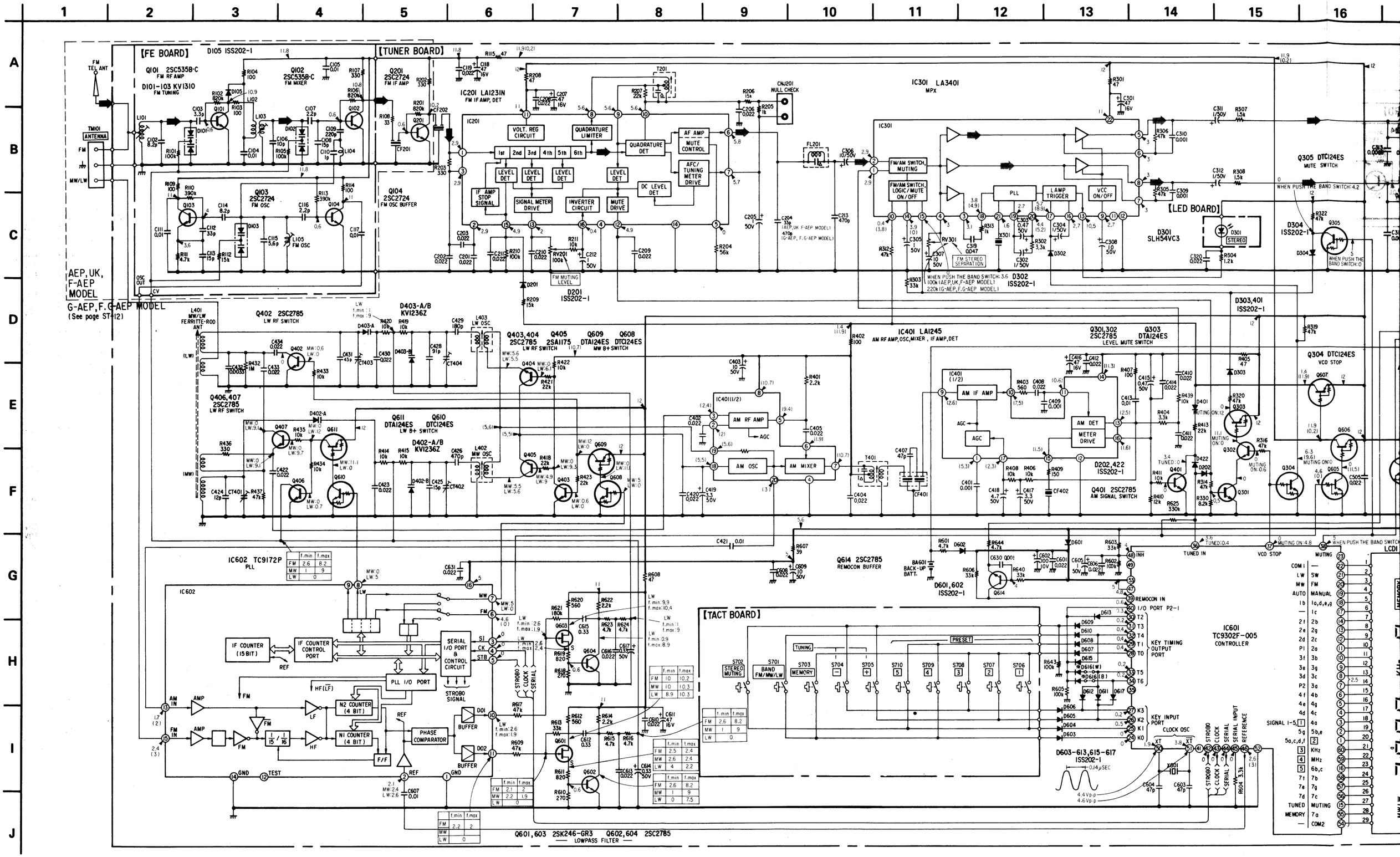


3-1. MOUNTING DIAGRAM

– Conductor Side –

- Refer to page ST-12 for Semiconductor Lead Layouts.




【FE BOARD】
【TUNER BOARD】
【LED BOARD】
【TACT BOARD】
AEP, UK, F-AEP MODEL
G-AEP, F, G-AEP MODEL
(See page ST-12)
IC201 LA1231N FM IF AMP, DET
IC301 LA3401 MPX
IC401 LA1245 AM RF AMP, OSC, MIXER, IF AMP, DET
IC602 TC9172P PLL
IC601 TC9302F-005 CONTROLLER
Q101 2SC535B-C FM RF AMP
Q102 2SC535B-C FM MIXER
Q103 2SC2724 FM OSC
Q104 2SC2724 FM OSC BUFFER
Q201 2SC2724 FM IF AMP
Q401 2SC2785 AM SIGNAL SWITCH
Q406,407 2SC2785 LW RF SWITCH
Q601,603 2SK246-GR3 Q602,604 2SC2785 LOWPASS FILTER
Q614 2SC2785 REMOCON BUFFER
D101-103 KV1310 FM TUNING
D105 ISS202-1
D201 ISS202-1
D202,422 ISS202-1
D301 SLH54VC3
D302 ISS202-1
D303,401 ISS202-1
D304 ISS202-1
D403-A/B KV1236Z
D402-A/B KV1236Z
D601,602 ISS202-1
D603-613,615-617 ISS202-1
Q301,302 2SC2785 LEVEL MUTE SWITCH
Q303 DTAI24ES MUTE SWITCH
Q304 DTC124ES VCO STOP
Q305 DTC124ES MUTE SWITCH
Q403,404 2SC2785 LW RF SWITCH
Q405 2SAI175
Q609 DTAI24ES
Q608 DTC124ES MW B+ SWITCH
Q611 DTAI24ES
Q610 DTC124ES LW B+ SWITCH
Q402-A/B KV1236Z
Q501 DTAI24ES
Q502 DTC124ES
Q503 DTAI24ES
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Q505 DTC124ES
Q506 DTC124ES
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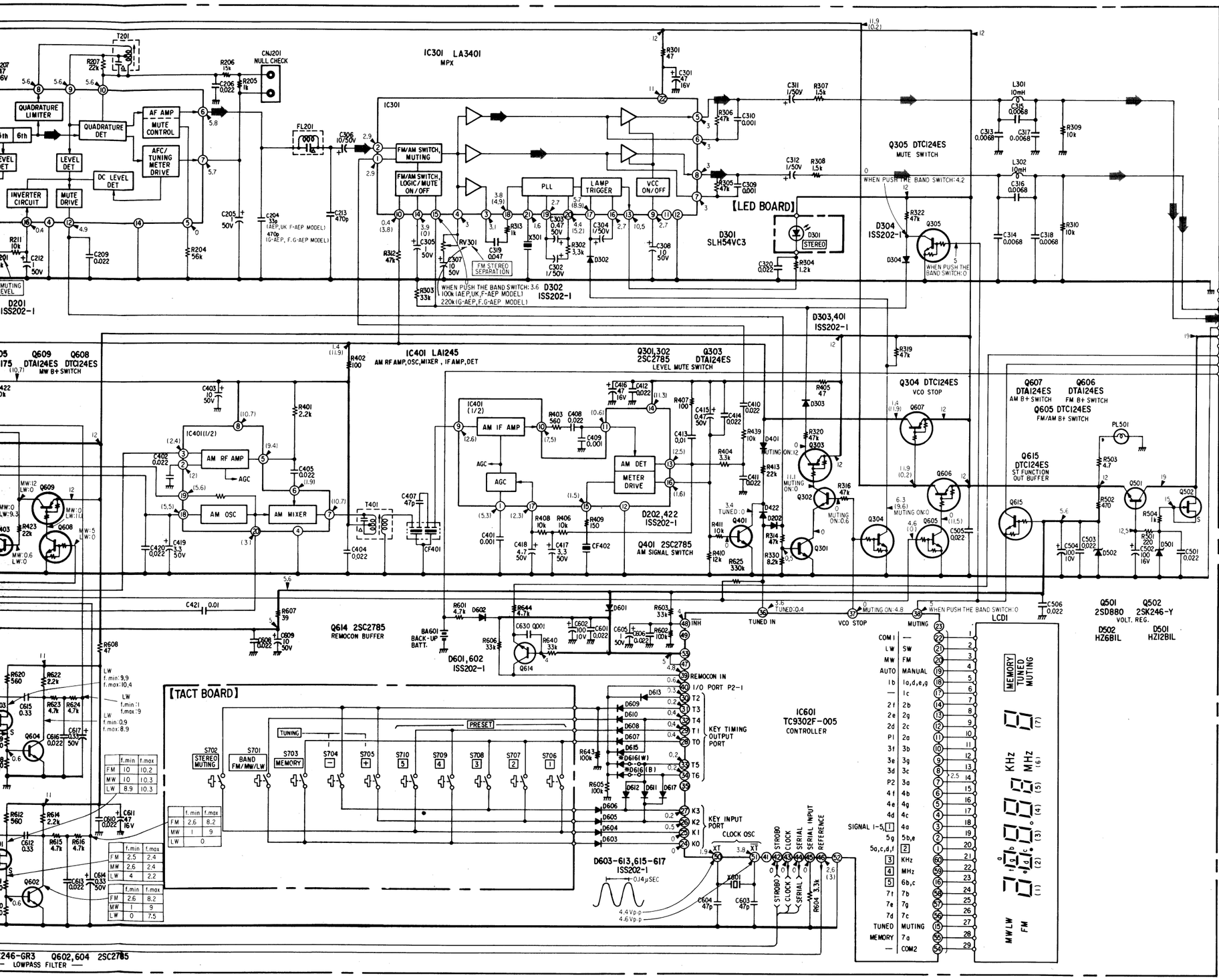
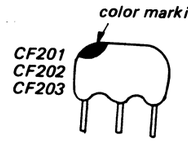


Note:

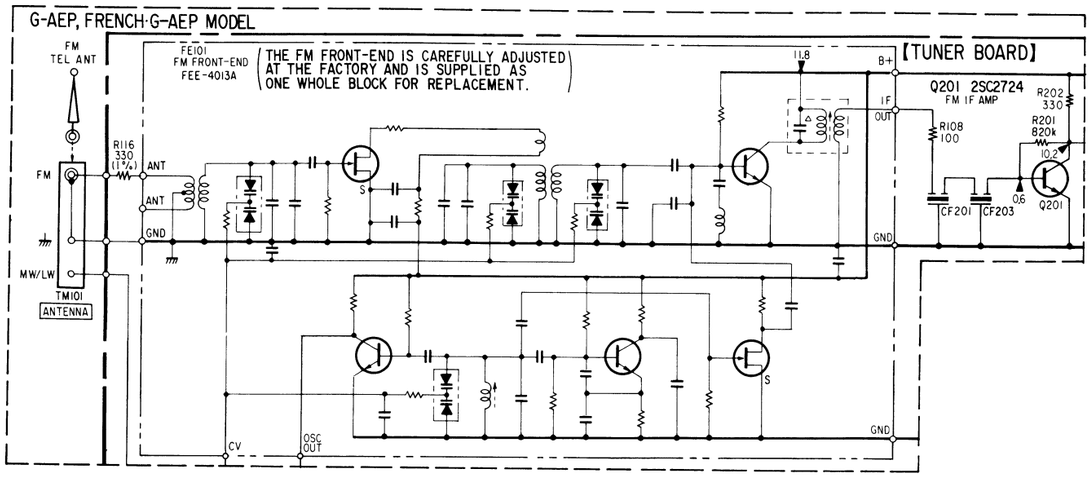
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ▨ : signal path.
- △ : internal component.
- ▬ : B+ bus.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under detuned conditions with a VOM (50 kΩ/V).
  no mark: FM
  ( ): AM
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground in detuned mode by using oscilloscope. Voltage variations may be noted due to normal production tolerances.
- F-AEP: FRENCH-AEP
- F·G-AEP: FRENCH·G-AEP

※ : When replacing ceramic filters CF201, 202 and CF203 (G-AEP model), color marking on their bodies should be the same.
Connect or remove D616 according to color marking of ceramic filters.



CF201 – 203 color marking	D616
black	D616 (B), connected
red	not connected
white	D616 (W), connected

3-3. FM FRONT-END SCHEMATIC DIAGRAM (G-AEP, FRENCH·G-AEP MODEL)

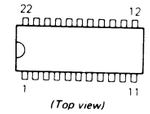


- **Semiconductor Lead Layouts**

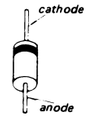
2SA733-P
2SC535

2SK246-GR2
2SK246-Y

LA3401



HZ6B1L
HZ12A3L



2SC2603-F
2SC2724-C
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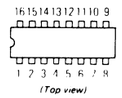
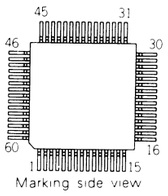
DTC124ES

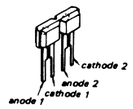
LA1231
TC9172P



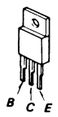
TC9302F-005



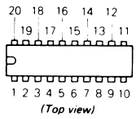
KV1236Z



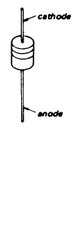
2SD880



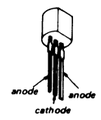
LA1245



1SS202-1



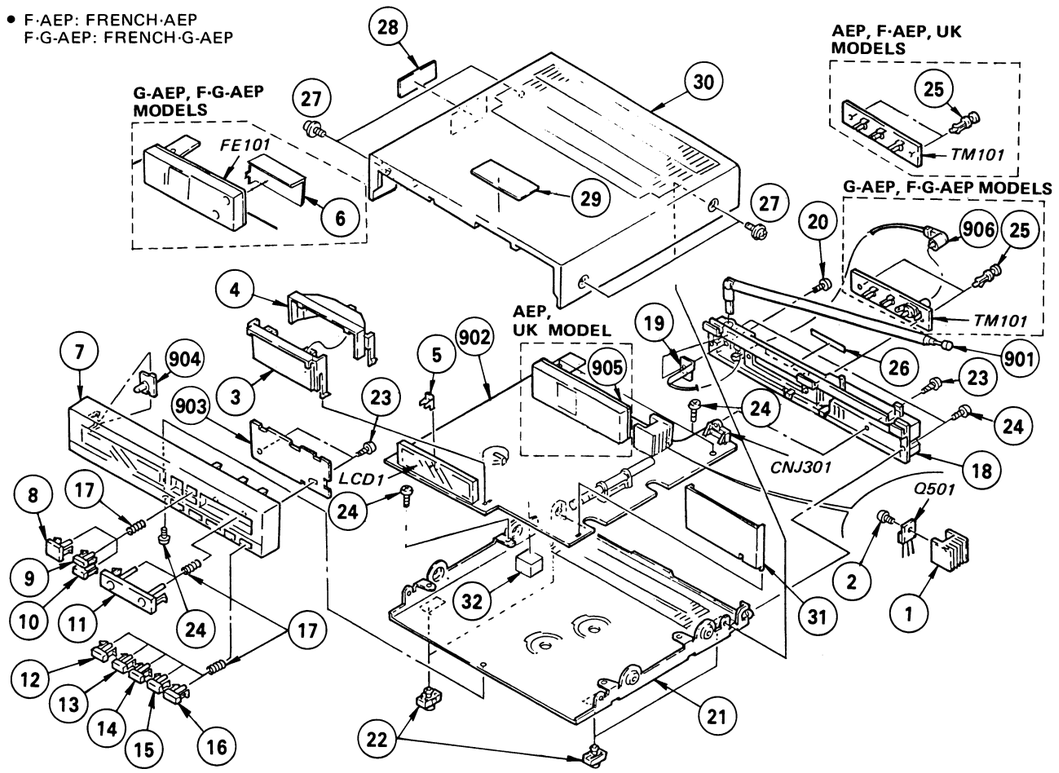
KV1310



SLH54VC3

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- F·AEP: FRENCH·AEP
  F·G-AEP: FRENCH·G-AEP



No.	Part No.	escription	Remarks
1	*4-363-146-21	HEAT SINK, V.OUT	
2	7-685-646-81	SCREW +BVTT 3X8 TYPE2	
3	*4-909-633-01	ILLUMINATOR	
4	*4-904-515-01	HOUSE, LAMP	
5	*4-904-507-01	BLIND, LAMP	
6	*4-910-359-01	PLATE, SHIELD	
7	X-4910-084-1	PANEL ASSY, FRONT	
8	4-910-093-11	BUTTON, SQUARE (BAND)	
9	4-910-087-01	BUTTON (B), SQUARE (STEREO MUTING)	
10	4-910-087-71	BUTTON (B), SQUARE (MEMORY)	
11	4-910-094-11	BUTTON, SQUARE (TUNING)	
12	4-914-314-01	BUTTON, SQUARE (PRESET 1)	
13	4-914-314-11	BUTTON, SQUARE (PRESET 2)	
14	4-914-314-21	BUTTON, SQUARE (PRESET 3)	
15	4-914-314-31	BUTTON, SQUARE (PRESET 4)	
16	4-914-314-41	BUTTON, SQUARE (PRESET 5)	
17	4-886-032-00	SPRING, COMPRESSION	
18	4-910-098-01	PLATE, JACK	
19	*4-910-081-01	TERMINAL BOARD, ROD ANTENNA	
20	7-682-548-09	SCREW +B 3X8	
21	*4-902-941-21	CHASSIS	
22	X-4902-937-1	FOOT ASSY, RUBBER	
23	7-685-646-71	SCREW +BVTP 3X8 TYPE2 N-S	
24	7-685-871-01	SCREW +BVTT 3X6 (S)	
25	4-829-039-00	RIVET, NYLON	

No.	Part No.	Description	Remarks
26	*4-910-084-01	(AEP,F·G-AEP,UK)...LABEL, ANTENNA	
	4-910-085-01	(G-AEP,F·G-AEP)....LABEL, ANTENNA	
27	4-886-821-21	SCREW, M3 CASE STOPPER	
28	*4-914-318-01	(AEP,UK).....LABEL, MODEL NUMBER	
	*4-914-313-01	(F·AEP,F·G-AEP)...LABEL, MODEL NUMBER	
	*4-914-365-01	(G-AEP).....LABEL, MODEL NUMBER	
29	4-884-927-00	LABEL (SYSTEM), CAUTION	
30	X-4902-904-1	CASE ASSY	
31	*4-910-090-01	PLATE, SHIELD	
32	9-911-842-XX	CUSHION (F)	
901	1-501-321-11	ANTENNA, TELESCOPIC	
902	*A-4351-529-A	(AEP,F·AEP,UK)....MOUNTED PCB, TUNER	
	*A-4351-530-A	(G-AEP,F·G-AEP)...MOUNTED PCB, TUNER	
903	*1-615-524-11	PC BOARD, TACT	
904	*1-615-525-11	PC BOARD, LED	
905	*1-615-526-11	(AEP,F·AEP,UK)....PC BOARD, F.E	
906	*1-562-908-11	(G-AEP,F·G-AEP)...CONNECTOR, FEMALE (NO SHIELD)	
CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P	
FE101	1-463-611-11	(G-AEP,F·G-AEP)...FRONT END, FM (FEE-4013A)	
LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056	
Q501	8-729-288-02	TRANSISTOR 2SD880	
TM101	1-536-733-00	(G-AEP,F·G-AEP).....TERMINAL BOARD, ANTENNA	
TM101	1-536-901-11	(AEP,F·AEP,UK)...TERMINAL BOARD 3P, ANTENNA	

NOTE:
- Items m
  they ar
  service
  pated w
- If ther
  set suc
  typical
  capacit
  circuit

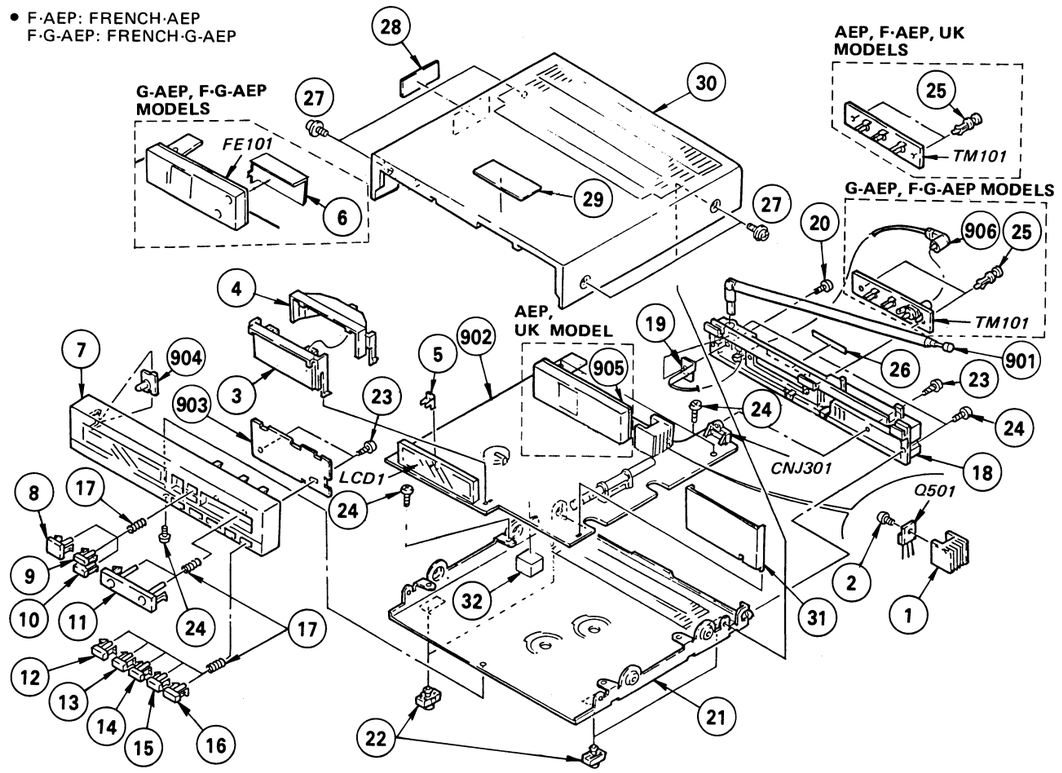
- F·AE
  F·G-A

Ref.No.	Par
901	1-5
902	*A-4
	*A-4
903	*1-6
904	*1-6
905	*1-6
906	*1-5
BA601	1-5
C102	1-1
C103	1-1
C104	1-1
C105	1-1
C106	1-1
C107	1-1
C108	1-1
C109	1-1
C110	1-1
C111	1-1
C112	1-1
C113	1-1
C114	1-1
C115	1-1
C116	1-1
C117	1-1
C118	1-1
C119	1-1
C201	1-1
C202	1-1
C203	1-1
C204	1-1
C204	1-1
C205	1-1
C206	1-1
C207	1-1
C208	1-1
C209	1-1
C210	1-1
C211	1-1
C212	1-1
C301	1-1
C302	1-1
C303	1-1
C304	1-1
C305	1-1

SECTION 4 (AEP, UK model)
EXPLODED VIEWS AND PARTS LIST

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

● F·AEP: FRENCH·AEP
F·G-AEP: FRENCH·G-AEP



No.	Part No.	escription	Remarks
1	*4-363-146-21	HEAT SINK, V.OUT	
2	7-685-646-81	SCREW +BVTT 3X8 TYPE2	
3	*4-909-633-01	ILLUMINATOR	
4	*4-904-515-01	HOUSE, LAMP	
5	*4-904-507-01	BLIND, LAMP	
6	*4-910-359-01	PLATE, SHIELD	
7	X-4910-084-1	PANEL ASSY, FRONT	
8	4-910-093-11	BUTTON, SQUARE (BAND)	
9	4-910-087-01	BUTTON (B), SQUARE (STEREO MUTING)	
10	4-910-087-71	BUTTON (B), SQUARE (MEMORY)	
11	4-910-094-11	BUTTON, SQUARE (TUNING)	
12	4-914-314-01	BUTTON, SQUARE (PRESET 1)	
13	4-914-314-11	BUTTON, SQUARE (PRESET 2)	
14	4-914-314-21	BUTTON, SQUARE (PRESET 3)	
15	4-914-314-31	BUTTON, SQUARE (PRESET 4)	
16	4-914-314-41	BUTTON, SQUARE (PRESET 5)	
17	4-886-032-00	SPRING, COMPRESSION	
18	4-910-098-01	PLATE, JACK	
19	*4-910-081-01	TERMINAL BOARD, ROD ANTENNA	
20	7-682-548-09	SCREW +B 3X8	
21	*4-902-941-21	CHASSIS	
22	X-4902-937-1	FOOT ASSY, RUBBER	
23	7-685-646-71	SCREW +BVTP 3X8 TYPE2 N-S	
24	7-685-871-01	SCREW +BVTT 3X6 (S)	
25	4-829-039-00	RIVET, NYLON	

No.	Part No.	Description	Remarks
26	*4-910-084-01	(AEP,F·G-AEP,UK)...LABEL, ANTENNA	
	4-910-085-01	(G-AEP,F·G-AEP)....LABEL, ANTENNA	
27	4-886-821-21	SCREW, M3 CASE STOPPER	
28	*4-914-318-01	(AEP,UK).....LABEL, MODEL NUMBER	
	*4-914-313-01	(F·AEP,F·G-AEP)...LABEL, MODEL NUMBER	
	*4-914-365-01	(G-AEP).....LABEL, MODEL NUMBER	
29	4-884-927-00	LABEL (SYSTEM), CAUTION	
30	X-4902-904-1	CASE ASSY	
31	*4-910-090-01	PLATE, SHIELD	
32	9-911-842-XX	CUSHION (F)	
901	1-501-321-11	ANTENNA, TELESCOPIC	
902	*A-4351-529-A	(AEP,F·AEP,UK)....MOUNTED PCB, TUNER	
	*A-4351-530-A	(G-AEP,F·G-AEP)...MOUNTED PCB, TUNER	
903	*1-615-524-11	PC BOARD, TACT	
904	*1-615-525-11	PC BOARD, LED	
905	*1-615-526-11	(AEP,F·AEP,UK)....PC BOARD, F.E	
906	*1-562-908-11	(G-AEP,F·G-AEP)...CONNECTOR, FEMALE (NO SHIELD)	
CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P	
FE101	1-463-611-11	(G-AEP,F·G-AEP)...FRONT END, FM (FEE-4013A)	
LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056	
Q501	8-729-288-02	TRANSISTOR 2SD880	
TM101	1-536-733-00	(G-AEP,F·G-AEP).....TERMINAL BOARD, ANTENNA	
TM101	1-536-901-11	(AEP,F·AEP,UK)...TERMINAL BOARD 3P, ANTENNA	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

● F·AEP: FRENCH·AEP
F·G-AEP: FRENCH·G-AEP

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
· All resistors are in ohms.
· F : nonflammable

COILS
· MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	1-501-321-11	ANTENNA, TELESCOPIC
902	*A-4351-529-A	(AEP,F·AEP,UK)....MOUNTED PCB, TUNER
	*A-4351-439-A	(G-AEP,F·G-AEP)...MOUNTED PCB, TUNER
903	*1-615-524-11	PC BOARD, TACT
904	*1-615-525-11	PC BOARD, LED
905	*1-615-526-11	(AEP,F·AEP,UK)....PC BOARD, F.E
906	*1-562-908-11	(G-AEP,F·G-AEP)...CONNECTOR, FEMALE (NO SHIELD)
BA601	1-528-120-00	BATTERY, LITHIUM (CR-2025)
C102	1-162-198-31	(AEP,F·AEP,UK)...CERAMIC 8.2PF 10% 50V
C103	1-162-193-31	(AEP,F·AEP,UK)...CERAMIC 3.3PF 10% 50V
C104	1-162-306-31	(AEP,F·AEP,UK)...CERAMIC 0.01MF 20% 16V
C105	1-162-306-31	(AEP,F·AEP,UK)...CERAMIC 0.01MF 20% 16V
C106	1-162-199-31	(AEP,F·AEP,UK)...CERAMIC 10PF 5% 50V
C107	1-162-191-31	(AEP,F·AEP,UK)...CERAMIC 2.2PF 10% 50V
C108	1-162-203-31	(AEP,F·AEP,UK)...CERAMIC 15PF 5% 50V
C109	1-162-286-31	(AEP,F·AEP,UK)...CERAMIC 220PF 10% 50V
C110	1-162-187-31	(AEP,F·AEP,UK)...CERAMIC 1PF 20% 50V
C111	1-162-306-31	(AEP,F·AEP,UK)...CERAMIC 0.01MF 20% 16V
C112	1-162-211-31	(AEP,F·AEP,UK)...CERAMIC 33PF 5% 50V
C113	1-162-203-31	(AEP,F·AEP,UK)...CERAMIC 15PF 5% 50V
C114	1-162-198-31	(AEP,F·AEP,UK)...CERAMIC 8.2PF 10% 50V
C115	1-162-196-31	(AEP,F·AEP,UK)...CERAMIC 5.6PF 10% 50V
C116	1-162-191-31	(AEP,F·AEP,UK)...CERAMIC 2.2PF 10% 50V
C117	1-162-306-31	CERAMIC 0.01MF 20% 16V
C118	1-123-332-00	ELECT 47MF 20% 25V
C119	1-101-005-00	CERAMIC 0.022MF 50V
C201	1-101-005-00	CERAMIC 0.022MF 50V
C202	1-101-005-00	CERAMIC 0.022MF 50V
C203	1-101-005-00	CERAMIC 0.022MF 50V
C204	1-162-211-31	(AEP,F·AEP,UK)....CERAMIC 33PF 5% 50V
C204	1-162-290-31	(G-AEP,F·G-AEP)...CERAMIC 470PF 10% 50V
C205	1-123-380-00	ELECT 1MF 20% 50V
C206	1-101-005-00	CERAMIC 0.022MF 50V
C207	1-123-332-00	ELECT 47MF 20% 16V
C208	1-101-005-00	CERAMIC 0.022MF 50V
C209	1-101-005-00	CERAMIC 0.022MF 50V
C210	1-101-005-00	CERAMIC 0.022MF 50V
C211	1-101-005-00	CERAMIC 0.022MF 50V
C212	1-123-380-00	ELECT 1MF 20% 50V
C301	1-123-332-00	ELECT 47MF 20% 16V
C302	1-123-380-00	ELECT 1MF 20% 50V
C303	1-123-379-00	ELECT 0.47MF 20% 50V
C304	1-123-380-00	ELECT 1MF 20% 50V
C305	1-123-380-00	ELECT 1MF 20% 50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C306	1-123-356-00	ELECT	10MF	20%	50V
C307	1-123-356-00	ELECT	10MF	20%	50V
C308	1-123-356-00	ELECT	10MF	20%	50V
C309	1-162-294-31	CERAMIC	0.001MF	10%	50V
C310	1-162-294-31	CERAMIC	0.001MF	10%	50V
C311	1-123-380-00	ELECT	1MF	20%	50V
C312	1-123-380-00	ELECT	1MF	20%	50V
C313	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C314	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C315	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C316	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C317	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C318	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C319	1-130-491-00	MYLAR	0.047MF	5%	50V
C320	1-101-005-00	CERAMIC	0.022MF		50V
C401	1-162-294-31	CERAMIC	0.001MF	10%	50V
C402	1-101-005-00	CERAMIC	0.022MF		50V
C403	1-123-356-00	ELECT	10MF	20%	50V
C404	1-101-005-00	CERAMIC	0.022MF		50V
C405	1-101-005-00	CERAMIC	0.022MF		50V
C407	1-162-215-31	CERAMIC	47PF	5%	50V
C408	1-161-494-00	CERAMIC	0.022MF	30%	25V
C409	1-162-294-31	CERAMIC	0.001MF	10%	50V
C410	1-130-487-00	MYLAR	0.022MF	5%	50V
C411	1-101-005-00	CERAMIC	0.022MF		50V
C412	1-101-005-00	CERAMIC	0.022MF		50V
C413	1-162-306-31	CERAMIC	0.01MF	20%	16V
C414	1-101-005-00	CERAMIC	0.022MF		50V
C415	1-123-379-00	ELECT	0.47MF	20%	50V
C416	1-123-332-00	ELECT	47MF	20%	16V
C417	1-123-382-00	ELECT	3.3MF	20%	50V
C418	1-123-369-00	ELECT	4.7MF	20%	50V
C419	1-123-382-00	ELECT	3.3MF	20%	50V
C420	1-101-005-00	CERAMIC	0.022MF		50V
C421	1-162-306-31	CERAMIC	0.01MF	20%	16V
C422	1-161-494-00	CERAMIC	0.022MF	30%	25V
C423	1-101-005-00	CERAMIC	0.022MF		50V
C424	1-102-949-00	CERAMIC	12PF	5%	50V
C425	1-102-880-00	CERAMIC	15PF	5%	50V
C426	1-104-069-00	POLYSTYRENE	470PF	5%	50V
C428	1-102-701-00	CERAMIC	91PF	5%	50V
C429	1-103-707-00	STYROL	180PF	5%	50V
C430	1-101-005-00	CERAMIC	0.022MF		50V
C431	1-102-966-00	CERAMIC	43PF	5%	50V
C432	1-162-303-31	CERAMIC	0.0033MF	20%	16V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C433	1-161-494-00	CERAMIC	0.022MF	30%	25V
C434	1-101-005-00	CERAMIC	0.022MF		50V
C501	1-101-005-00	CERAMIC	0.022MF		50V
C502	1-123-333-00	ELECT	100MF	20%	16V
C503	1-101-005-00	CERAMIC	0.022MF		50V
C504	1-123-307-00	ELECT	100MF	20%	10V
C505	1-101-005-00	CERAMIC	0.022MF		50V
C506	1-101-005-00	CERAMIC	0.022MF		50V
C601	1-101-005-00	CERAMIC	0.022MF		50V
C602	1-123-307-00	ELECT	100MF	20%	10V
C603	1-102-852-00	CERAMIC	47PF	5%	50V
C604	1-102-852-00	CERAMIC	47PF	5%	50V
C605	1-123-380-00	ELECT	1MF	20%	50V
C606	1-101-005-00	CERAMIC	0.022MF		50V
C607	1-162-306-31	CERAMIC	0.01MF	20%	16V
C608	1-101-005-00	CERAMIC	0.022MF		50V
C609	1-123-356-00	ELECT	10MF	20%	50V
C610	1-101-005-00	CERAMIC	0.022MF		50V
C611	1-123-332-00	ELECT	47MF	20%	16V
C612	1-136-171-00	FILM	0.33MF	5%	50V
C613	1-130-487-00	MYLAR	0.022MF	5%	50V
C614	1-123-609-00	ELECT	0.33MF	20%	50V
C615	1-136-171-00	FILM	0.33MF	5%	50V
C616	1-130-487-00	MYLAR	0.022MF	5%	50V
C617	1-123-609-00	ELECT	0.33MF	20%	50V
C630	1-162-294-31	CERAMIC	0.001	10%	50V
C631	1-101-005-00	CERAMIC	0.022MF		50V
CF201	1-527-968-00	FILTER, CERAMIC			
CF202	1-527-968-00	FILTER, CERAMIC			
CF203	1-527-968-00	(G-AEP,F·G-AEP)...FILTER, CERAMIC			
CF401	1-527-937-00	FILTER, CERAMIC			
CF402	1-527-981-00	FILTER, CERAMIC			
CNJ101*	1-562-327-00	(AEP,F·AEP,UK)...SOCKET, CONNECTOR 3P			
CNJ201*	1-560-060-00	PIN, CONNECTOR 2P (NULL CHECK POINT)			
CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P			
CNJ601*	1-560-604-00	PIN, CONNECTOR 5P			
CNJ602*	1-560-602-00	PIN, CONNECTOR 3P			
CNJ603*	1-560-603-00	PIN, CONNECTOR 4P			
CT401	1-141-227-00	CAP, CERAMIC TRIMMER			
CT402	1-141-227-00	CAP, CERAMIC TRIMMER			
CT403	1-141-227-00	CAP, CERAMIC TRIMMER			
CT404	1-141-227-00	CAP, CERAMIC TRIMMER			
D101	8-719-918-45	(AEP,G-AEP,UK)...DIODE KV1310			
D102	8-719-918-45	(AEP,G-AEP,UK)...DIODE KV1310			
D103	8-719-918-45	(AEP,G-AEP,UK)...DIODE KV1310			
D105	8-719-107-94	(AEP,G-AEP,UK)...DIODE 1SS202-1			
D201	8-719-107-94	DIODE 1SS202-1			
D202	8-719-107-94	DIODE 1SS202-1			
D301	8-719-904-08	DIODE SLH54VC3			
D302	8-719-107-94	DIODE 1SS202-1			
D303	8-719-107-94	DIODE 1SS202-1			
D304	8-719-107-94	DIODE 1SS202-1			
D401	8-719-107-94	DIODE 1SS202-1			
D402	8-719-902-79	DIODE KV1236Z			
D403	8-719-902-79	DIODE KV1236Z			
D422	8-719-107-94	DIODE 1SS202-1			
D501	8-719-910-23	DIODE HZ12A3L			
D502	8-719-910-64	DIODE HZ6B1L			
D601	8-719-107-94	DIODE 1SS202-1			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D602	8-719-107-94	DIODE 1SS202-1
D603	8-719-107-94	DIODE 1SS202-1
D604	8-719-107-94	DIODE 1SS202-1
D605	8-719-107-94	DIODE 1SS202-1
D606	8-719-107-94	DIODE 1SS202-1
D607	8-719-107-94	DIODE 1SS202-1
D608	8-719-107-94	DIODE 1SS202-1
D609	8-719-107-94	DIODE 1SS202-1
D610	8-719-107-94	DIODE 1SS202-1
D611	8-719-107-94	DIODE 1SS202-1
D612	8-719-107-94	DIODE 1SS202-1
D613	8-719-107-94	DIODE 1SS202-1
D615	8-719-107-94	DIODE 1SS202-1
D616	8-719-107-94	DIODE 1SS202-1
D617	8-719-107-94	DIODE 1SS202-1
FE101	1-463-611-11	(G-AEP,F·G-AEP)...FRONT END, FM (FEE-4013A)
FL201	1-235-126-00	ENCAPSULATED COMPONENT
IC201	8-759-812-31	IC LA1231
IC301	8-759-801-80	IC LA3401
IC401	8-759-812-45	IC LA1245
IC601	8-759-204-24	IC TC9302F-005
IC602	8-759-202-63	IC TC9172P
L101	*1-422-214-11	(AEP,F·AEP,UK)...COIL, AIR-CORE
L102	*1-422-040-00	(AEP,F·AEP,UK)...COIL, AIR-CORE
L103	*1-422-081-00	(AEP,F·AEP,UK)...COIL (WITH CORE)
L104	*1-422-039-00	(AEP,F·AEP,UK)...COIL, AIR-CORE
L105	*1-459-396-00	(AEP,F·AEP,UK)...COIL (WITH CORE)
L301	1-408-924-00	MICRO INDUCTOR 10MMH
L302	1-408-924-00	MICRO INDUCTOR 10MMH
L401	1-402-151-11	ANTENNA, FERRITE-ROD (LW/MW)
L402	1-406-089-11	COIL (OSC)
L403	1-406-090-11	COIL (OSC)
LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056
PL501	1-518-511-21	LAMP, PILOT, YELLOW
Q101	8-729-353-52	(AEP,G-AEP,UK)...TRANSISTOR 2SC535
Q102	8-729-353-52	(AEP,G-AEP,UK)...TRANSISTOR 2SC535
Q103	8-729-672-42	(AEP,G-AEP,UK)...TRANSISTOR 2SC2724-C
Q104	8-729-672-42	(AEP,G-AEP,UK)...TRANSISTOR 2SC2724-C
Q201	8-729-672-42	TRANSISTOR 2SC2724-C
Q301	8-729-606-33	TRANSISTOR 2SC2603-F
Q302	8-729-606-33	TRANSISTOR 2SC2603-F
Q303	8-729-900-63	TRANSISTOR DTA124ES
Q304	8-729-900-36	TRANSISTOR DTC124ES
Q305	8-729-900-36	TRANSISTOR DTC124ES
Q401	8-729-606-33	TRANSISTOR 2SC2603-F
Q402	8-729-606-33	TRANSISTOR 2SC2603-F
Q403	8-729-606-33	TRANSISTOR 2SC2603-F
Q404	8-729-606-33	TRANSISTOR 2SC2603-F
Q405	8-729-173-37	TRANSISTOR 2SA733-P
Q406	8-729-606-33	TRANSISTOR 2SC2603-F
Q407	8-729-606-33	TRANSISTOR 2SC2603-F
Q501	8-729-288-02	TRANSISTOR 2SD880
Q502	8-729-224-61	TRANSISTOR 2SK246-Y
Q601	8-729-201-56	TRANSISTOR 2SK246-GR2
Q602	8-729-606-33	TRANSISTOR 2SC2603-F
Q603	8-729-201-56	TRANSISTOR 2SK246-GR2

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q604	8-729-606-33	TRANSISTOR 2SC2603-F
Q605	8-729-900-36	TRANSISTOR DTC124ES
Q606	8-729-900-63	TRANSISTOR DTA124ES
Q607	8-729-900-63	TRANSISTOR DTA124ES
Q608	8-729-900-36	TRANSISTOR DTC124ES
Q609	8-729-900-63	TRANSISTOR DTA124ES
Q610	8-729-900-36	TRANSISTOR DTC124ES
Q611	8-729-900-63	TRANSISTOR DTA124ES
Q614	8-729-606-33	TRANSISTOR 2SC2603-F
Q615	8-729-900-36	TRANSISTOR DTC124ES
R101	1-249-441-11	(AEP,F·AEP,UK)...CARBON 100K 5% 1/6W
R102	1-247-901-00	(AEP,F·AEP,UK)...CARBON 820K 5% 1/6W
R103	1-249-405-00	(AEP,F·AEP,UK)...CARBON 100 5% 1/6W
R104	1-249-405-00	(AEP,F·AEP,UK)...CARBON 100 5% 1/6W
R105	1-249-441-11	(AEP,F·AEP,UK)...CARBON 100K 5% 1/6W
R106	1-247-901-00	(AEP,F·AEP,UK)...CARBON 820K 5% 1/6W
R107	1-247-819-00	(AEP,F·AEP,UK)...CARBON 330 5% 1/6W
R108	1-247-795-00	(AEP,F·AEP,UK)...CARBON 33 5% 1/6W
R108	1-249-405-00	(G-AEP,F·G-AEP)..CARBON 100 5% 1/6W
R109	1-249-405-00	(AEP,F·AEP,UK)...CARBON 100 5% 1/6W
R110	1-247-893-00	(AEP,F·AEP,UK)...CARBON 390K 5% 1/6W
R111	1-249-425-11	(AEP,F·AEP,UK)...CARBON 4.7K 5% 1/6W
R112	1-247-859-00	(AEP,F·AEP,UK)...CARBON 15K 5% 1/6W
R113	1-247-893-00	(AEP,F·AEP,UK)...CARBON 390K 5% 1/6W
R114	1-249-405-00	(AEP,F·AEP,UK)...CARBON 100 5% 1/6W
R115	1-247-799-00	CARBON 47 5% 1/6W
R116	1-247-706-11	(G-AEP,F·G-AEP)...CARBON 330 5% 1/4W
R201	1-247-901-00	CARBON 820K 5% 1/6W
R202	1-247-819-00	CARBON 330 5% 1/6W
R203	1-247-819-00	CARBON 330 5% 1/6W
R204	1-247-873-00	CARBON 56K 5% 1/6W
R205	1-249-417-11	CARBON 1K 5% 1/6W
R206	1-247-859-00	CARBON 15K 5% 1/6W
R207	1-249-433-11	CARBON 22K 5% 1/6W
R208	1-247-799-00	CARBON 47 5% 1/6W
R209	1-247-859-00	CARBON 15K 5% 1/6W
R210	1-249-441-11	CARBON 100K 5% 1/6W
R211	1-249-429-11	CARBON 10K 5% 1/6W
R301	1-247-799-00	CARBON 47 5% 1/6W
R302	1-249-423-11	CARBON 3.3K 5% 1/6W
R303	1-249-435-11	CARBON 33K 5% 1/6W
R304	1-247-833-00	CARBON 1.2K 5% 1/6W
R305	1-249-437-11	CARBON 47K 5% 1/6W
R306	1-249-437-11	CARBON 47K 5% 1/6W
R307	1-249-419-11	CARBON 1.5K 5% 1/6W
R308	1-249-419-11	CARBON 1.5K 5% 1/6W
R309	1-249-429-11	CARBON 10K 5% 1/6W
R310	1-249-429-11	CARBON 10K 5% 1/6W
R312	1-249-437-11	CARBON 47K 5% 1/6W
R313	1-249-417-11	CARBON 1K 5% 1/6W
R314	1-249-437-11	CARBON 47K 5% 1/6W
R316	1-249-437-11	CARBON 47K 5% 1/6W
R319	1-249-437-11	CARBON 47K 5% 1/6W
R320	1-249-437-11	CARBON 47K 5% 1/6W
R322	1-249-437-11	CARBON 47K 5% 1/6W
R330	1-247-853-00	CARBON 8.2K 5% 1/6W
R401	1-249-421-11	CARBON 2.2K 5% 1/6W
R402	1-249-405-00	CARBON 100 5% 1/6W
R403	1-249-414-11	CARBON 560 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
R404	1-249-423-11	CARBON 3.3K 5% 1/6W
R405	1-247-799-00	CARBON 47 5% 1/6W
R406	1-249-429-11	CARBON 10K 5% 1/6W
R407	1-249-405-00	CARBON 100 5% 1/6W
R408	1-249-429-11	CARBON 10K 5% 1/6W
R409	1-247-811-00	CARBON 150 5% 1/6W
R410	1-247-857-00	CARBON 12K 5% 1/6W
R411	1-249-429-11	CARBON 10K 5% 1/6W
R413	1-249-433-11	CARBON 22K 5% 1/6W
R414	1-249-429-11	CARBON 10K 5% 1/6W
R415	1-249-429-11	CARBON 10K 5% 1/6W
R418	1-249-433-11	CARBON 22K 5% 1/6W
R419	1-249-429-11	CARBON 10K 5% 1/6W
R420	1-249-429-11	CARBON 10K 5% 1/6W
R421	1-249-433-11	CARBON 22K 5% 1/6W
R422	1-249-429-11	CARBON 10K 5% 1/6W
R423	1-249-433-11	CARBON 22K 5% 1/6W
R432	1-247-903-00	CARBON 1M 5% 1/6W
R433	1-249-429-11	CARBON 10K 5% 1/6W
R434	1-249-429-11	CARBON 10K 5% 1/6W
R435	1-249-429-11	CARBON 10K 5% 1/6W
R436	1-247-819-00	CARBON 330 5% 1/6W
R437	1-249-437-11	CARBON 47K 5% 1/6W
R439	1-249-429-11	CARBON 10K 5% 1/6W
R501	1-247-815-00	CARBON 220 5% 1/6W
R502	1-247-823-00	CARBON 470 5% 1/6W
R503	1-247-775-00	CARBON 4.7 5% 1/6W
R504	1-249-417-11	CARBON 1K 5% 1/6W
R601	1-249-425-11	CARBON 4.7K 5% 1/6W
R602	1-249-441-11	CARBON 100K 5% 1/6W
R603	1-249-435-11	CARBON 33K 5% 1/6W
R604	1-249-423-00	CARBON 3.3K 5% 1/6W
R605	1-249-441-11	CARBON 100K 5% 1/6W
R606	1-247-435-11	CARBON 33K 5% 1/6W
R607	1-247-797-00	CARBON 39 5% 1/6W
R608	1-247-799-00	CARBON 47 5% 1/6W
R609	1-249-437-11	CARBON 47K 5% 1/6W
R610	1-247-817-00	CARBON 270 5% 1/6W
R611	1-247-829-00	CARBON 820 5% 1/6W
R612	1-249-414-11	CARBON 560 5% 1/6W
R613	1-249-435-00	CARBON 33K 5% 1/6W
R614	1-249-421-11	CARBON 2.2K 5% 1/6W
R615	1-249-425-11	CARBON 4.7K 5% 1/6W
R616	1-249-425-11	CARBON 4.7K 5% 1/6W
R617	1-249-437-11	CARBON 47K 5% 1/6W
R618	1-247-817-00	CARBON 270 5% 1/6W
R619	1-247-829-00	CARBON 820 5% 1/6W
R620	1-249-414-11	CARBON 560 5% 1/6W
R621	1-247-885-00	CARBON 180K 5% 1/6W
R622	1-249-421-11	CARBON 2.2K 5% 1/6W
R623	1-249-425-11	CARBON 4.7K 5% 1/6W
R624	1-249-425-11	CARBON 4.7K 5% 1/6W
R625	1-247-891-00	CARBON 330K 5% 1/6W
R640	1-249-435-11	CARBON 33K 5% 1/6W
R643	1-249-441-11	CARBON 100K 5% 1/6W
R644	1-249-425-11	CARBON 4.7K 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
RV201	1-228-997-00	RES, ADJ, CARBON 100K
RV301	1-228-997-00	(AEP,F·AEP,UK)...RES, ADJ, CARBON 100K
RV301	1-228-998-00	(G-AEP,F·G-AEP)..RES, ADJ, CARBON 220K
S701	1-554-303-21	SWITCH, KEY BOARD (BAND)
S702	1-554-303-21	SWITCH, KEY BOARD (STEREO MUTING)
S703	1-554-303-21	SWITCH, KEY BOARD (MEMORY)
S704	1-554-303-21	SWITCH, KEY BOARD (TUNING -)
S705	1-554-303-21	SWITCH, KEY BOARD (TUNING +)
S706	1-554-303-21	SWITCH, KEY BOARD (PRESET 1)
S707	1-554-303-21	SWITCH, KEY BOARD (PRESET 2)
S708	1-554-303-21	SWITCH, KEY BOARD (PRESET 3)
S709	1-554-303-21	SWITCH, KEY BOARD (PRESET 4)
S710	1-554-303-21	SWITCH, KEY BOARD (PRESET 5)
T201	1-404-419-00	COIL, DISCRIMINATOR
T401	1-404-535-11	COIL (WITH IFT)
TM101	1-536-733-00	(G-AEP,F·G-AEP) ....TERMINAL BOARD, ANTENNA
TM101	1-536-901-11	(AEP,F·AEP,UK) ....TERMINAL BOARD 3P, ANTENNA
X301	1-567-250-11	OSCILLATOR, CERAMIC
X601	1-567-125-00	VIBRATOR, CRYSTAL

FM STEREO/FM-AM TUNER
(ST-177R)

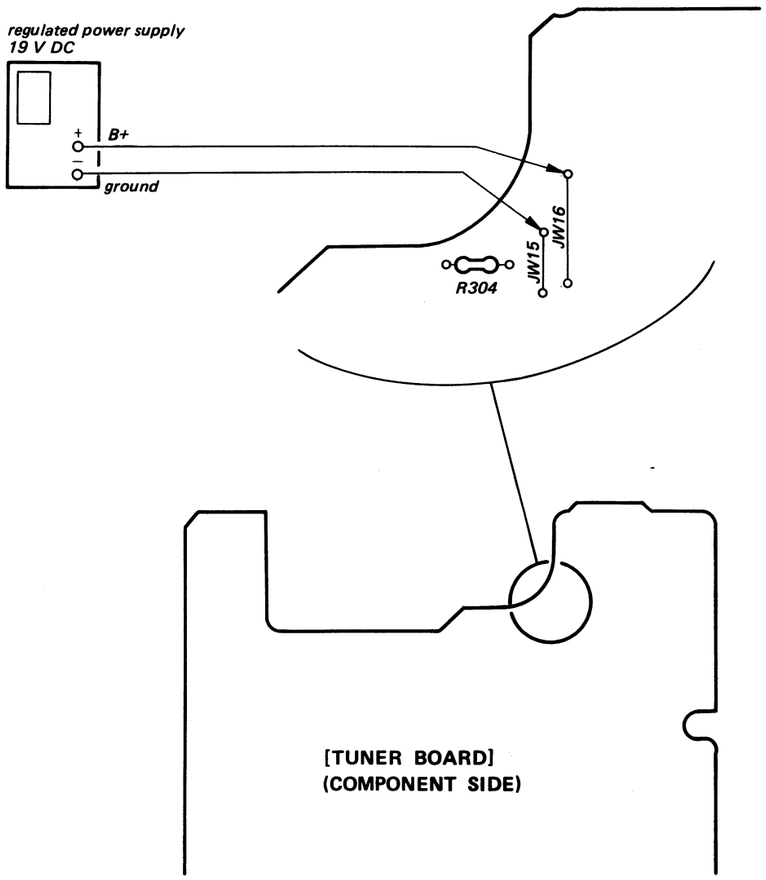
(E model)

REPAIRING PRECAUTION

[To apply B+ voltage]

The power of this unit is fed from TA-177R.

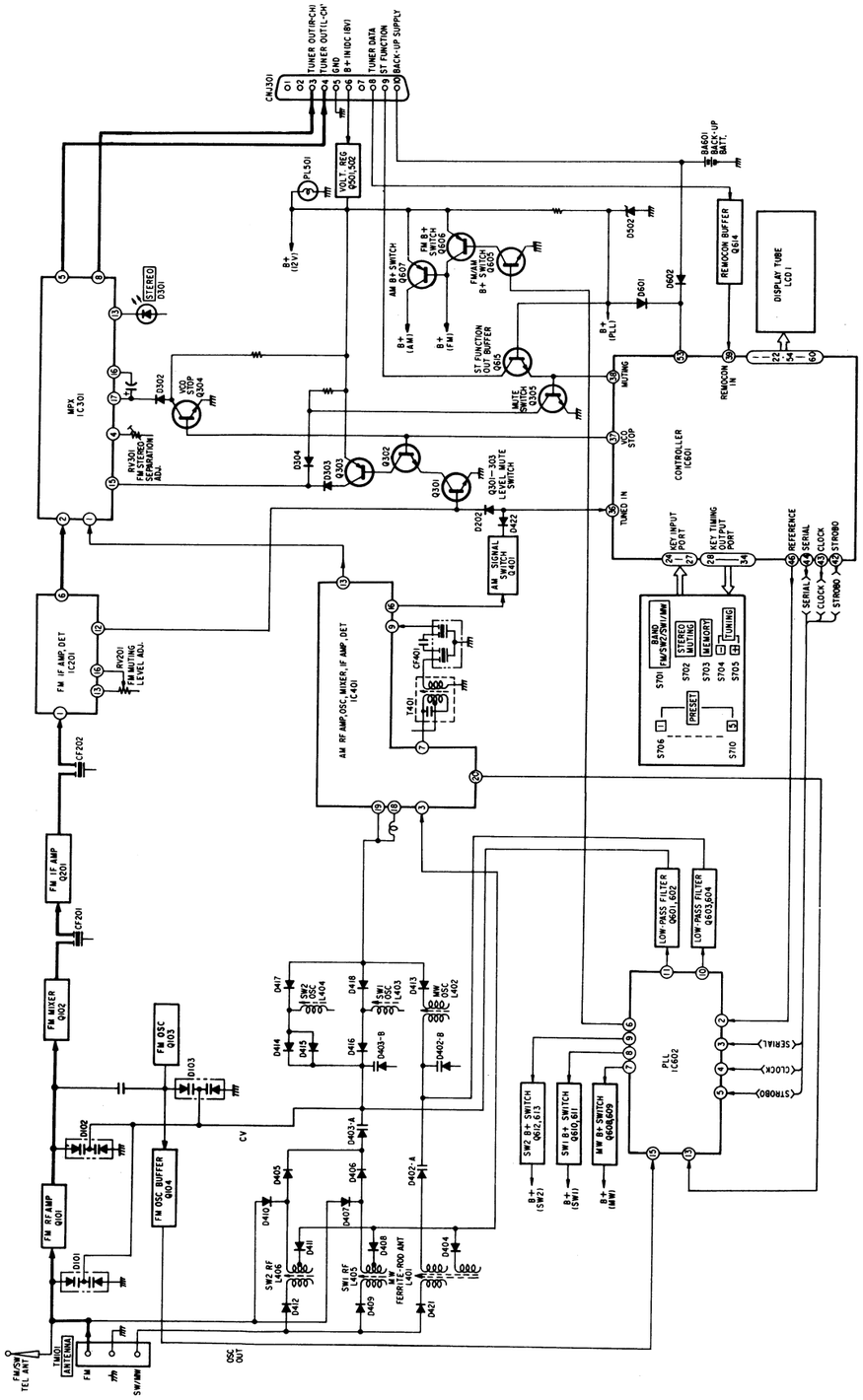
Because of this, connect the regulated power supply as illustrated below when this unit alone operates.



FH-150R
ST-177R

(E model)

SECTION 1
BLOCK DIAGRAM



SECTION 2
ADJUSTMENTS

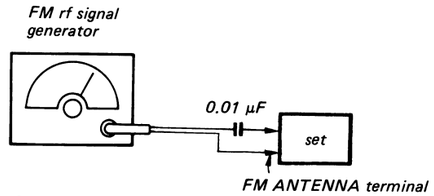
FM SECTION 1

Setting:

BAND selector switch . . . . FM

FM OSC Voltage Adjustment

Setting:

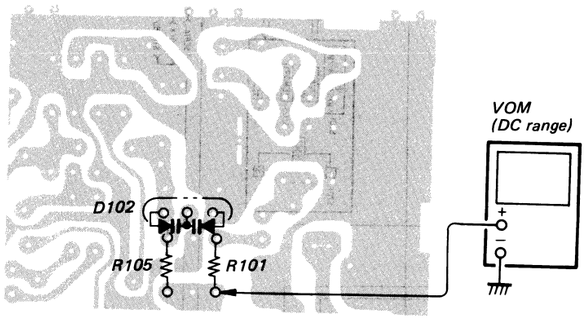


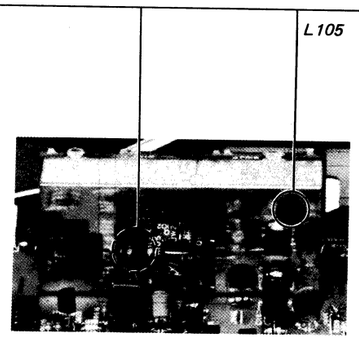
Carrier frequency: 108 MHz
Modulation: 1 kHz, 75 kHz deviation
Output level: as low as possible

Procedure:

1. Push the TUNING (+, –) button for 108 MHz.
2. Adjust L105 for 8.9 – 9 V reading on the VOM.

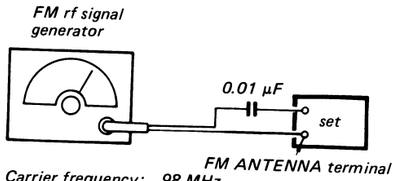
[FE BOARD] (CONDUCTOR SIDE)





FM Tracking Adjustment

Setting:

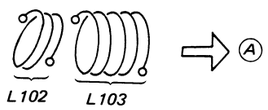


Carrier frequency: 98 MHz
Modulation: 1 kHz, 75 kHz deviation
Output level: 3.16 µV (10 dB)

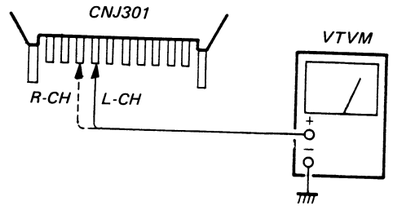
Procedure:

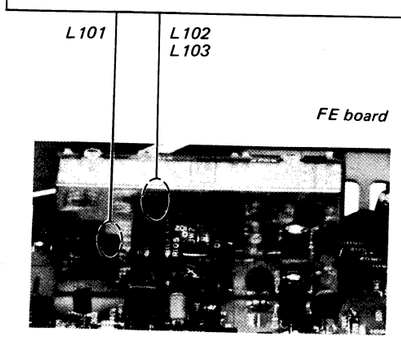
1. Push TUNING (+, –) button for 98 MHz.
2. Approach L102 and L103 not to contact each other.
3. Adjust L101 and L103, and repeat the adjustment 2 – 3 times for maximum VTVM reading.

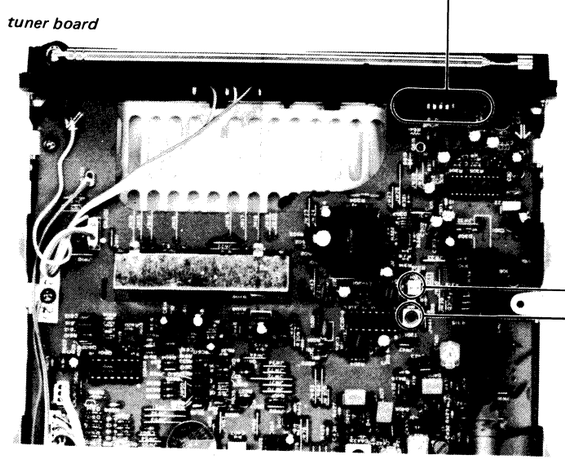
(Adjust L103 in the direction as shown by arrow Ⓐ.)



Note: Do not touch L102.



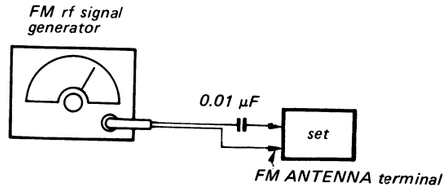




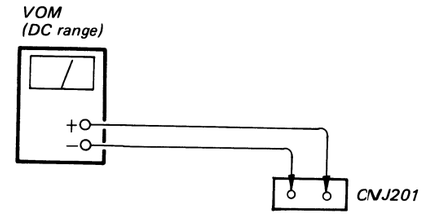
Note: FM discriminator alignment should be mode after FM tracking adjustment.

FM Discriminator Alignment (NULL Check)

Setting:

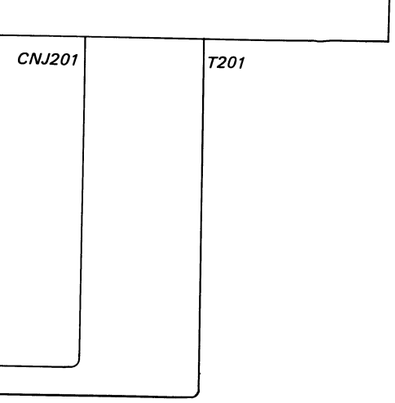


Carrier frequency: 98 MHz
Modulation: 1 kHz, 75 kHz deviation
Output level: 1 mV (60 dB)

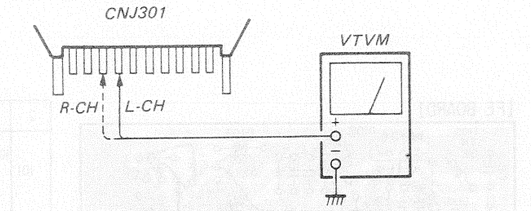


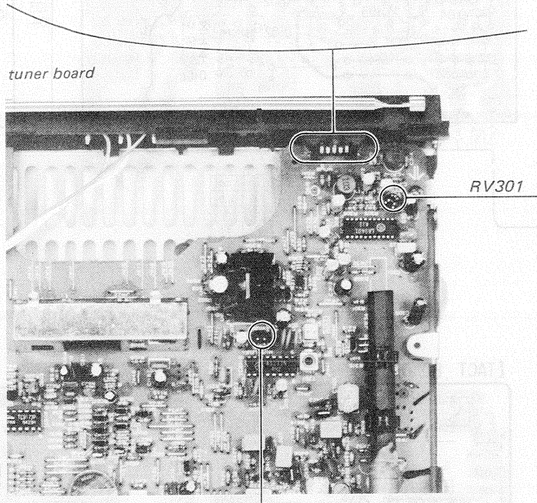
Procedure:

1. Push the TUNING (+, –) button for 98 MHz.
2. Adjust T201 for 0 V reading on the VOM.



FM SECTION 2



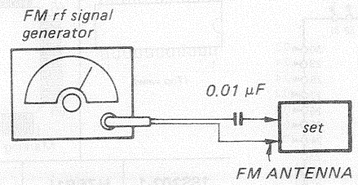


FM Muting Level Adjustment

Setting:

STEREO MUTING switch . . . . ON

Procedure:



Carrier frequency: 98 MHz
Modulation: 1 kHz, 75 kHz deviation
Output level: 17.9 µV (25 dB)

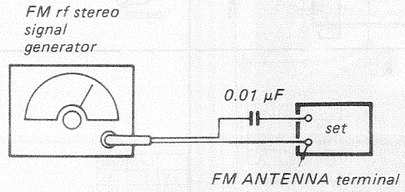
1. Push the TUNING (+, –) button for 98 MHz.
2. Adjust RV201 for a point the VTVM reading just drops to 0 V.

FM Stereo Separation Adjustment

Setting:

STEREO MUTING switch . . . . ON

Procedure:



Carrier frequency: 98 MHz
Modulation: audio (1 kHz): 33.75 kHz deviation
pilot (19 kHz): 7.5 kHz deviation
sub-channel (38 kHz): 33.75 kHz deviation
Output level: 1 mV (60 dB)
Mode: stereo

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV301 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV301 for minimum reading.

L-CH Stereo separation: Ⓐ – Ⓑ
R-CH Stereo separation: Ⓒ – Ⓓ

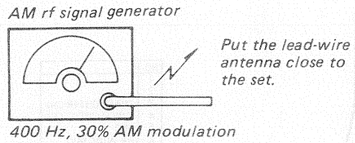
The separations of both channels should be equal.

AM SECTION

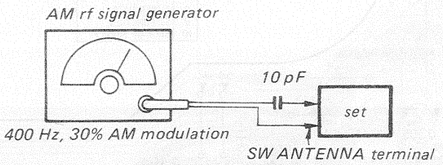
Setting:

BAND selector switch: MW, SW1 or SW2

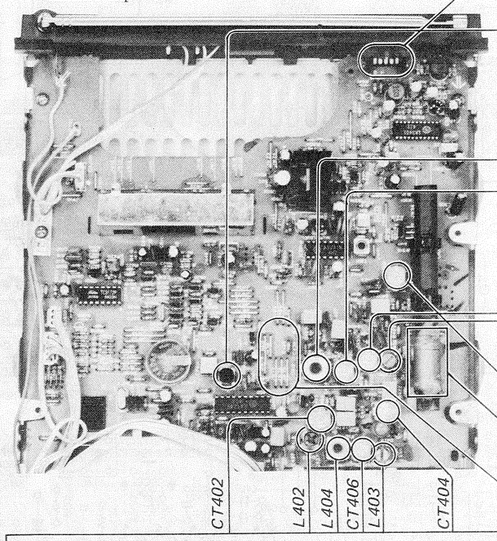
– MW –

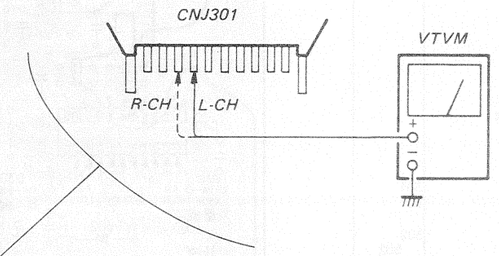


– SW –



- Repeat the procedures in each adjustment several times, and the OSC voltage and tracking adjustments should be finally done by the timmer capacitors.





AM IF ALIGNMENT	
Adjust for a maximum reading on VTVM.	
T401	450 kHz

SW2 TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
L406	10 MHz
CT405	20 MHz

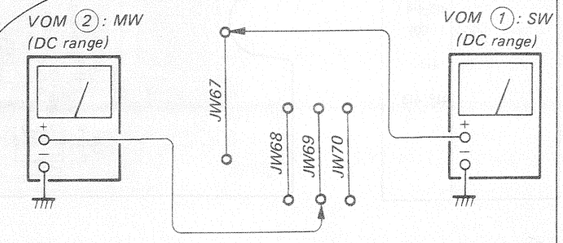
SW1 TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
CT403	6.5 MHz
L405	3.5 MHz

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
CT401	1,400 kHz
L401	600 kHz

MW/SW1/SW2 OSC Voltage Adjustment

Procedure:

1. Set BAND selector switch to MW.
2. Push TUNING (+, –) button for 530 kHz. Adjust L402 for 0.95 – 1.05 V VOM ② reading.
3. Push the button for 1,610 kHz. Adjust CT402 for 8.9 – 9.0 V VOM ② reading.
4. Set BAND selector switch to SW1.
5. Push TUNING (+, –) button for 3.2 MHz. Adjust L403 for 0.95 – 1.05 V VOM ① reading.
6. Push the button for 7.3 MHz. Adjust CT404 for 8.9 – 9.0 V VOM ① reading.
7. Set BAND selector switch to SW2.



8. Push TUNING (+, –) button for 9.5 MHz. Adjust L404 for 0.95 – 1.05 V VOM ① reading.
9. Push the button for 21.75 MHz. Adjust CT406 for 8.9 – 9.0 V VOM ① reading.

FH-150R **ST-177R** (E model)

FH-150R **ST-177R** (E model)

3-1. MOUNTING DIAGRAM

– Conductor Side –

● See page ST-11 for notes.

【TUNER BOARD】

【LED BOARD】

【FE BOARD】

【TACT BOARD】

【TACT BOARD】

● Semiconductor Lead Layouts

2SC535

2SC2603-F
2SC2724-C
DTA124ES
DTC124ES

2SD880

2SK246-GR2
2SK246-Y

LA1231
TC9172P

LA1245

LA3401

TC9302F-005

1SS202-1

HZ6B1L
HZ12A3L

KV1236Z

KV1310

SLH54VC3

【TUNER BOARD】

【LED BOARD】

【FE BOARD】

【TACT BOARD】

Q, IC	D
615	
IC301	
305	304 303
303 302 301	302 502 501 502
304	202
IC201	201
603 602 601 604 201	421
613,612, IC602	402-A
611 610 609	
608 614 606 605 607 401	404 401 422 407,403-A 409,405,607 613,609 408,406,610 615,603
411 412 616(W) 616(B)	617 611 612 606 605 604
602	403-B 608
IC401	416,402-B
	415,414
IC601	601
	417
	418 413

Q	D
101	105 103
102 103 104	102 101

NO.	
1	
2	
3	TUNER OUT(R-CH)
4	TUNER OUT(L-CH)
5	GND
6	B+ IN(DC 18V)
7	
8	TUNER DATA
9	ST FUNCTION
10	BACK-UP SUPPLY

	f. min	f. max
FM	2.6	8.9
MW	0.9	9
SW2	1	9.1
SW1	1.2	9.1

	f. min	f. max
SW2	0.9	10.2
SW1	0.9	8.8

	f. min	f. max
SW2	0.9	0.9
SW1	9	8.8

	f. min	f. max
SW1,2	2	1.7
FM	0.4	
MW	0.2	

	f. min	f. max
FM	2.6	2.4
MW	2.6	2.4
SW1,2	2.6	2.4

SW1,2 f. min:2.6 f. max:2.4

SW1,2 f. min:9.8 f. max:10.3

SW1,2 f. min:2 f. max:1.7

	f. min	f. max
FM	2.1	1.8
MW	2.1	1.8
SW1,2	0	

	f. min	f. max
FM	9.8	10.1
MW	9.8	10.2
SW1,2	9.8	10.2

	f. min	f. max
FM	2.5	8.9
MW	0.9	9
SW1,2	1.5	9

	f. min	f. max
FM	2.1	1.8
MW	2.1	1.8
SW1,2	0.2	

FM:2.3 SW1,2:2.2 MW:2.4

	f. min	f. max
FM	2.6	8.9
MW	0.9	9
SW2	1	9.1
SW1	1.2	9.1

• Semiconductor Lead Layouts

2SC535

2SC2603-F
2SC2724-C
DTA124ES
DTC124ES

2SD880

2SK246-GR2
2SK246-Y

LA1231
TC9172P

(Top view)

LA1245

(Top view)

LA3401

(Top view)

TC9302F-005

Marking side view

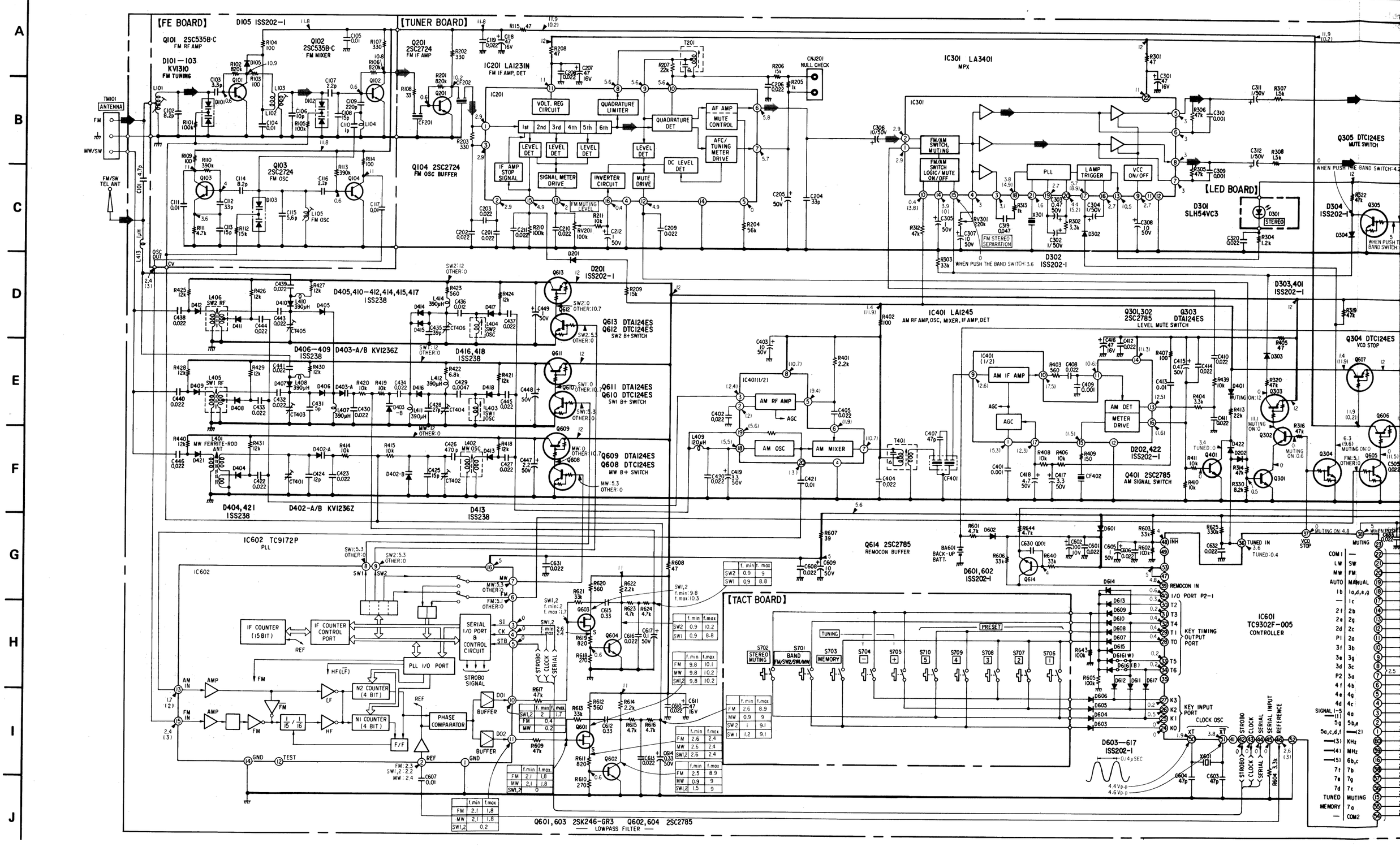
1SS202-1

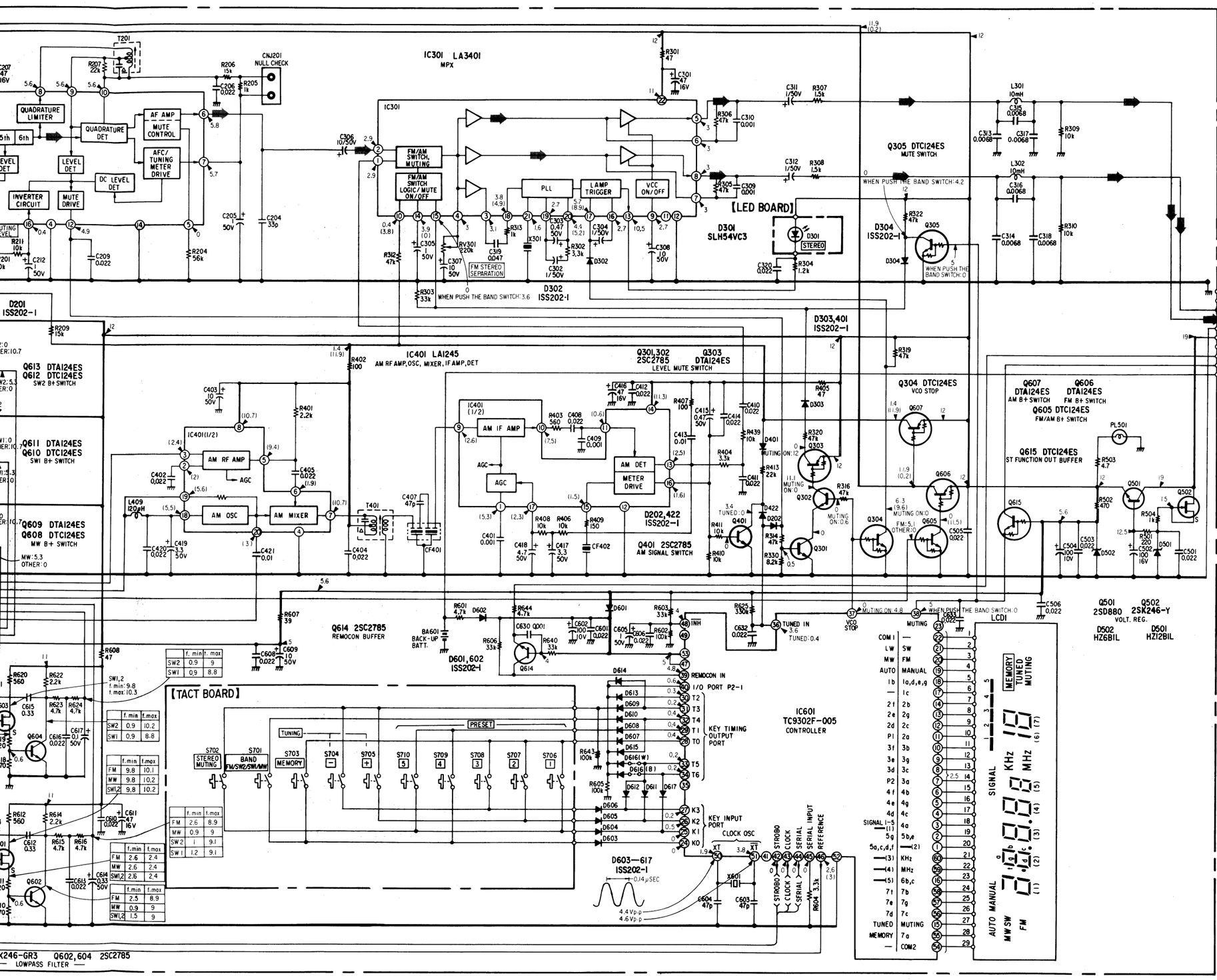
HZ6B1L
HZ12A3L

KV1236Z

KV1310

SLH54VC3


【FE BOARD】
【TUNER BOARD】
【LED BOARD】
【TACT BOARD】
Q101 2SC535B-C FM RF AMP
Q102 2SC535B-C FM MIXER
D101—103 KV1310 FM TUNING
Q201 2SC2724 FM IF AMP
IC201 LA1231N FM IF AMP, DET
IC301 LA3401 MPX
Q103 2SC2724 FM OSC
Q104 2SC2724 FM OSC BUFFER
D105 1SS202-1
D201 1SS202-1
D405,410—412,414,415,417 1SS238
D406—409 D403-A/B KV1236Z
D416,418 1SS238
D404,421 1SS238
D402-A/B KV1236Z
D413 1SS238
Q613 DTA124ES
Q612 DTC124ES
SW2 B+ SWITCH
Q611 DTA124ES
Q610 DTC124ES
SW1 B+ SWITCH
Q609 DTA124ES
Q608 DTC124ES
MW B+ SWITCH
IC401 LA1245
AM RF AMP,OSC, MIXER, IF AMP, DET
Q301,302 2SC2785
Q303 DTA124ES
LEVEL MUTE SWITCH
Q401 2SC2785
AM SIGNAL SWITCH
D202,422 1SS202-1
IC602 TC9172P
PLL
Q614 2SC2785
REMOCON BUFFER
D601,602 1SS202-1
Q601,603 2SK246-GR3
Q602,604 2SC2785
LOWPASS FILTER
IC601 TC9302F-005
CONTROLLER
D301 SLH54VC3
Q305 DTC124ES
MUTE SWITCH
Q304 DTC124ES
VCO STOP
D303,401 1SS202-1
D304 1SS202-1
D305 1SS202-1
D302 1SS202-1
D603—617 1SS202-1
FM STEREO SEPARATION
KEY TIMING OUTPUT PORT
KEY INPUT PORT
CLOCK OSC
REMOCON IN
I/O PORT P2-1
TUNED IN
MUTING
VCO STOP
ANTENNA
FM
MW/SW
FM/SW TEL ANT
BACK-UP BATT.
VOLT. REG CIRCUIT
QUADRATURE LIMITER
QUADRATURE DET
AF AMP MUTE CONTROL
AFC/ TUNING METER DRIVE
IF AMP STOP SIGNAL
SIGNAL METER DRIVE
INVERTER CIRCUIT
MUTE DRIVE
DC LEVEL DET
FM/AM SWITCH, MUTING
FM/AM SWITCH LOGIC/ MUTE ON/OFF
PLL
LAMP TRIGGER
VCC ON/OFF
AM IF AMP
AM RF AMP
AM OSC
AM MIXER
AM DET METER DRIVE
IF COUNTER (15 BIT)
IF COUNTER CONTROL PORT
SERIAL I/O PORT & CONTROL CIRCUIT
PLL I/O PORT
N2 COUNTER (4 BIT)
N1 COUNTER (4 BIT)
PHASE COMPARATOR
STROBO SIGNAL
STEREO MUTING
BAND FM/SW2/SW1/MW
MEMORY
TUNING
PRESET
WHEN PUSH THE BAND SWITCH: 3.6
WHEN PUSH THE BAND SWITCH: 4.2
WHEN PUSH THE BAND SWITCH: 4.8
MUTING ON: 0
MUTING ON: 4.8
TUNED: 0.4

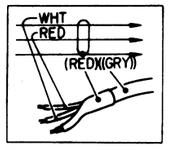


Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- ⇨ : signal path.
- △ : internal component.
- ▬ : B+ bus.
- ▭ : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under detuned conditions with a VOM (50 kΩ/V).
  no mark: FM
  ( ): AM
- Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken to ground in detuned mode by using oscilloscope. Voltage variations may be noted due to normal production tolerances.

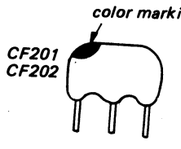
Note on Mounting Diagram:

- Color code of sleeving over the end of the jacket.



- [-▷- : indicates side identified with part number.
- ▬▶ : signal path
- ▬▶ : L-CH signal path
- ▬▶ : R-CH signal path
- ▒ : B + pattern

※ : When replacing ceramic filters CF201 and CF202, color marking on their bodies should be the same.
Connect or remove D616 according to color marking of ceramic filters.



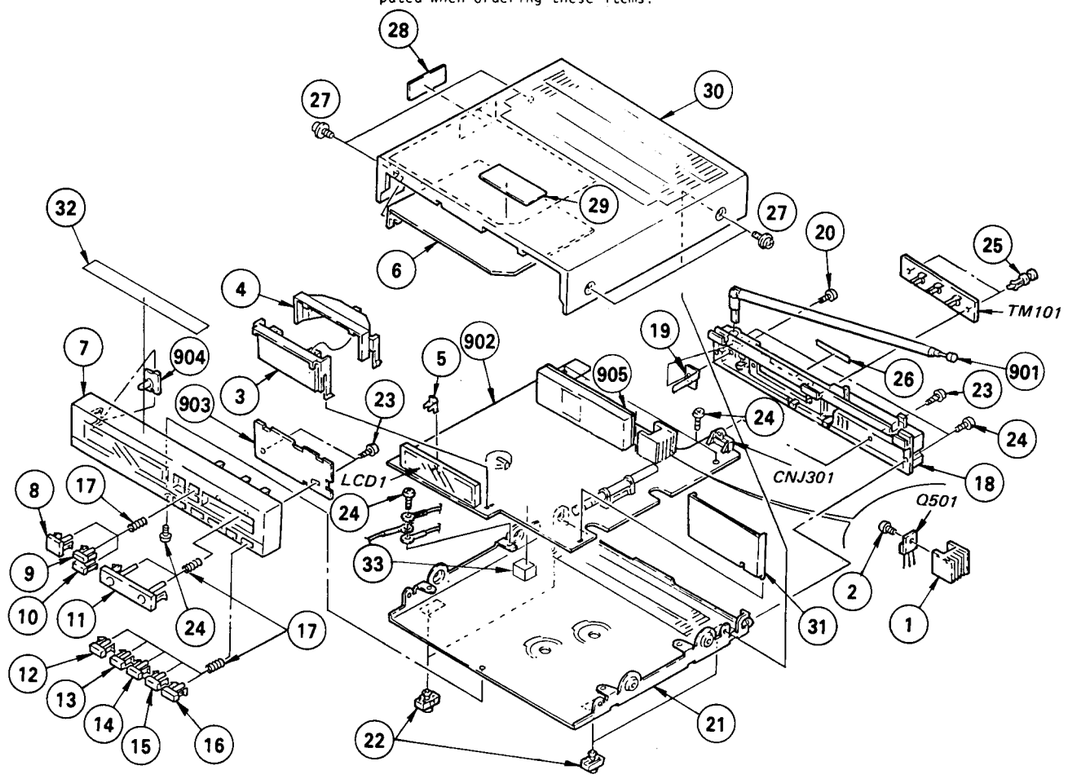
CF201, 202 color marking	D616
black	D616 (B), connected
red	not connected
white	D616 (W), connected

SECTION 4
EXPLODED VIEW AND PARTS LIST

NOTE:
The mechanical parts with no reference number in the exploded views are not supplied.

· Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

· The construction parts of an assembled part are indicated with a collation number in the remark column.



No.	Part No.	Description	Remarks
1	*4-363-146-21	HEAT SINK, V.OUT	
2	7-685-646-81	SCREW +BV 3X8 (S)	
3	*4-909-633-01	ILLUMINATOR	
4	*4-904-515-01	HOUSE, LAMP	
5	*4-904-507-01	BLIND, LAMP	
6	*4-910-337-01	PLATE, SHIELD	
7	X-4910-083-1	PANEL ASSY, FRONT	
8	4-910-093-11	BUTTON, SQUARE (BAND)	
9	4-910-087-01	BUTTON (B), SQUARE (STEREO MUTING)	
10	4-910-087-71	BUTTON (B), SQUARE (MOMERY)	
11	4-910-094-11	BUTTON, SQUARE (TUNING)	
12	4-914-314-01	BUTTON, SQUARE (PRESET 1)	
13	4-914-314-11	BUTTON, SQUARE (PRESET 2)	
14	4-914-314-21	BUTTON, SQUARE (PRESET 3)	
15	4-914-314-31	BUTTON, SQUARE (PRESET 4)	
16	4-914-314-41	BUTTON, SQUARE (PRESET 5)	
17	4-886-032-00	SPRING, COMPRESSION	
18	4-910-098-01	PLATE, JACK	
19	*4-910-081-01	TERMINAL BOARD, ROD ANTENNA	
20	7-682-548-09	SCREW +B 3X8	
21	*4-902-941-21	CHASSIS	
22	X-4902-937-1	FOOT ASSY, RUBBER	
23	7-685-646-71	SCREW +BVTP 3X8 TYPE2 N-S	
24	7-685-871-01	SCREW +BVTT 3X6 (S)	
25	4-829-039-00	RIVET, NYLON	
26	*4-910-083-01	LABEL, ANTENNA	
27	4-886-821-21	SCREW, M3 CASE STOPPER	
28	*4-914-317-01	LABEL, MODEL NUMBER	
29	4-884-927-00	LABEL (SYSTEM), CAUTION	
30	X-4902-904-1	CASE ASSY (BLACK)	
31	*4-910-090-01	PLATE, SHIELD	
32	4-884-873-00	SEAL, INDICATION, METER BAND	
33	9-911-842-XX	CUSHION	
901	1-501-321-11	ANTENNA, TELESCOPIC	
902	*A-4351-441-A	MOUNTED PCB, TUNER	
903	*1-615-520-11	PC BOARD, TACT	
904	*1-615-521-11	PC BOARD, LED	
905	*1-615-522-11	PC BOARD, F.E	
CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P	
LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056	
Q501	8-729-288-02	TRANSISTOR 2SD880	
TM101	1-536-901-11	TERMINAL BOARD 3P (ANTENNA)	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:
· Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

· If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
· All resistors are in ohms.
· F : nonflammable

COILS
· MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC,
UPD...: μPD...

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
901	1-501-321-11	ANTENNA, TELESCOPIC			
902	*A-4351-441-A	MOUNTED PCB, TUNER			
903	*1-615-520-11	PC BOARD, TACT			
904	*1-615-521-11	PC BOARD, LED			
905	*1-615-522-11	PC BOARD, F.E			
BA601	1-528-120-00	BATTERY, LITHIUM (CR-2025)			
C101	1-162-195-31	CERAMIC	4.7PF	10%	50V
C102	1-162-198-31	CERAMIC	8.2PF	10%	50V
C103	1-162-193-31	CERAMIC	3.3PF	10%	50V
C104	1-162-306-31	CERAMIC	0.01MF	20%	16V
C105	1-162-306-31	CERAMIC	0.01MF	20%	16V
C106	1-162-199-31	CERAMIC	10PF	5%	50V
C107	1-162-191-31	CERAMIC	2.2PF	10%	50V
C108	1-162-203-31	CERAMIC	15PF	5%	50V
C109	1-162-286-31	CERAMIC	220PF	10%	50V
C110	1-162-187-31	CERAMIC	1PF	20%	50V
C111	1-162-306-31	CERAMIC	0.01MF	20%	16V
C112	1-162-211-31	CERAMIC	33PF	5%	50V
C113	1-162-203-31	CERAMIC	15PF	5%	50V
C114	1-162-198-31	CERAMIC	8.2PF	10%	50V
C115	1-162-196-31	CERAMIC	5.6PF	10%	50V
C116	1-162-191-31	CERAMIC	2.2PF	20%	50V
C117	1-162-306-31	CERAMIC	0.01MF	20%	16V
C118	1-123-332-00	ELECT	47MF	20%	16V
C119	1-101-005-00	CERAMIC	0.022MF		50V
C201	1-101-005-00	CERAMIC	0.022MF		50V
C202	1-101-005-00	CERAMIC	0.022MF		50V
C203	1-101-005-00	CERAMIC	0.022MF		50V
C204	1-162-211-31	CERAMIC	33PF	5%	50V
C205	1-123-380-00	ELECT	1MF	20%	50V
C206	1-101-005-00	CERAMIC	0.022MF		50V
C207	1-123-332-00	ELECT	47MF	20%	16V
C208	1-101-005-00	CERAMIC	0.022MF		50V
C209	1-101-005-00	CERAMIC	0.022MF		50V
C210	1-101-005-00	CERAMIC	0.022MF		50V
C211	1-101-005-00	CERAMIC	0.022MF		50V
C212	1-123-380-00	ELECT	1MF	20%	50V
C301	1-123-332-00	ELECT	47MF	20%	16V
C302	1-123-380-00	ELECT	1MF	20%	50V
C303	1-123-379-00	ELECT	0.47MF	20%	50V
C304	1-123-380-00	ELECT	1MF	20%	50V
C305	1-123-380-00	ELECT	1MF	20%	50V
C306	1-123-356-00	ELECT	10MF	20%	50V
C307	1-123-356-00	ELECT	10MF	20%	50V
C308	1-123-356-00	ELECT	10MF	20%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C309	1-162-294-31	CERAMIC	0.001MF	10%	50V
C310	1-162-294-31	CERAMIC	0.001MF	10%	50V
C311	1-123-380-00	ELECT	1MF	20%	50V
C312	1-123-380-00	ELECT	1MF	20%	50V
C313	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C314	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C315	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C316	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C317	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C318	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C319	1-130-491-00	MYLAR	0.047MF	5%	50V
C320	1-101-005-00	CERAMIC	0.022MF		50V
C401	1-162-294-31	CERAMIC	0.001MF	10%	50V
C402	1-101-005-00	CERAMIC	0.022MF		50V
C403	1-123-356-00	ELECT	10MF	20%	50V
C404	1-101-005-00	CERAMIC	0.022MF		50V
C405	1-101-005-00	CERAMIC	0.022MF		50V
C407	1-162-215-31	CERAMIC	47PF	5%	50V
C408	1-161-494-00	CERAMIC	0.022MF	30%	25V
C409	1-162-294-31	CERAMIC	0.001MF	10%	50V
C410	1-130-487-00	MYLAR	0.022MF	5%	50V
C411	1-101-005-00	CERAMIC	0.022MF		50V
C412	1-101-005-00	CERAMIC	0.022MF		50V
C413	1-162-306-31	CERAMIC	0.01MF	20%	16V
C414	1-101-005-00	CERAMIC	0.022MF		50V
C415	1-123-379-00	ELECT	0.47MF	20%	50V
C416	1-123-332-00	ELECT	47MF	20%	16V
C417	1-123-382-00	ELECT	3.3MF	20%	50V
C418	1-123-369-00	ELECT	4.7MF	20%	50V
C419	1-123-382-00	ELECT	3.3MF	20%	50V
C420	1-101-005-00	CERAMIC	0.022MF		50V
C421	1-162-306-31	CERAMIC	0.01MF	20%	16V
C422	1-161-494-00	CERAMIC	0.022MF	30%	25V
C423	1-101-005-00	CERAMIC	0.022MF		50V
C424	1-102-949-00	CERAMIC	12PF	5%	50V
C425	1-102-880-00	CERAMIC	15PF	5%	50V
C426	1-104-069-00	POLYSTYRENE	470PF	5%	50V
C427	1-101-005-00	CERAMIC	0.022MF		50V
C428	1-102-803-00	CERAMIC	27PF	5%	50V
C429	1-103-741-00	STYROL	0.0047MF	5%	50V
C430	1-101-005-00	CERAMIC	0.022MF		50V
C431	1-102-942-00	CERAMIC	5PF	5%	50V
C432	1-101-005-00	CERAMIC	0.022MF		50V
C433	1-101-005-00	CERAMIC	0.022MF		50V
C434	1-101-005-00	CERAMIC	0.022MF		50V

Ref.No.
C435
C436
C437
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C501
C502
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C613
C614
C615
C616
C617
C630
C631
C632
C633
C634
C635
CF201
CF202
CF401
CF402
CNJ101
CNJ201
CNJ301
CNJ601
CNJ602
CNJ603
CT401
CT402
CT403
CT404
CT405
CT406

SECTION 5 (E model)
ELECTRICAL PARTS LIST

NOTE:
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC,
UPD...: μPD...

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
901	1-501-321-11	ANTENNA, TELESCOPIC			
902	*A-4351-441-A	MOUNTED PCB, TUNER			
903	*1-615-520-11	PC BOARD, TACT			
904	*1-615-521-11	PC BOARD, LED			
905	*1-615-522-11	PC BOARD, F.E			
BA601	1-528-120-00	BATTERY, LITHIUM (CR-2025)			
C101	1-162-195-31	CERAMIC	4.7PF	10%	50V
C102	1-162-198-31	CERAMIC	8.2PF	10%	50V
C103	1-162-193-31	CERAMIC	3.3PF	10%	50V
C104	1-162-306-31	CERAMIC	0.01MF	20%	16V
C105	1-162-306-31	CERAMIC	0.01MF	20%	16V
C106	1-162-199-31	CERAMIC	10PF	5%	50V
C107	1-162-191-31	CERAMIC	2.2PF	10%	50V
C108	1-162-203-31	CERAMIC	15PF	5%	50V
C109	1-162-286-31	CERAMIC	220PF	10%	50V
C110	1-162-187-31	CERAMIC	1PF	20%	50V
C111	1-162-306-31	CERAMIC	0.01MF	20%	16V
C112	1-162-211-31	CERAMIC	33PF	5%	50V
C113	1-162-203-31	CERAMIC	15PF	5%	50V
C114	1-162-198-31	CERAMIC	8.2PF	10%	50V
C115	1-162-196-31	CERAMIC	5.6PF	10%	50V
C116	1-162-191-31	CERAMIC	2.2PF	20%	50V
C117	1-162-306-31	CERAMIC	0.01MF	20%	16V
C118	1-123-332-00	ELECT	47MF	20%	16V
C119	1-101-005-00	CERAMIC	0.022MF		50V
C201	1-101-005-00	CERAMIC	0.022MF		50V
C202	1-101-005-00	CERAMIC	0.022MF		50V
C203	1-101-005-00	CERAMIC	0.022MF		50V
C204	1-162-211-31	CERAMIC	33PF	5%	50V
C205	1-123-380-00	ELECT	1MF	20%	50V
C206	1-101-005-00	CERAMIC	0.022MF		50V
C207	1-123-332-00	ELECT	47MF	20%	16V
C208	1-101-005-00	CERAMIC	0.022MF		50V
C209	1-101-005-00	CERAMIC	0.022MF		50V
C210	1-101-005-00	CERAMIC	0.022MF		50V
C211	1-101-005-00	CERAMIC	0.022MF		50V
C212	1-123-380-00	ELECT	1MF	20%	50V
C301	1-123-332-00	ELECT	47MF	20%	16V
C302	1-123-380-00	ELECT	1MF	20%	50V
C303	1-123-379-00	ELECT	0.47MF	20%	50V
C304	1-123-380-00	ELECT	1MF	20%	50V
C305	1-123-380-00	ELECT	1MF	20%	50V
C306	1-123-356-00	ELECT	10MF	20%	50V
C307	1-123-356-00	ELECT	10MF	20%	50V
C308	1-123-356-00	ELECT	10MF	20%	50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C309	1-162-294-31	CERAMIC	0.001MF	10%	50V
C310	1-162-294-31	CERAMIC	0.001MF	10%	50V
C311	1-123-380-00	ELECT	1MF	20%	50V
C312	1-123-380-00	ELECT	1MF	20%	50V
C313	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C314	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C315	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C316	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C317	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C318	1-162-305-31	CERAMIC	0.0068MF	20%	16V
C319	1-130-491-00	MYLAR	0.047MF	5%	50V
C320	1-101-005-00	CERAMIC	0.022MF		50V
C401	1-162-294-31	CERAMIC	0.001MF	10%	50V
C402	1-101-005-00	CERAMIC	0.022MF		50V
C403	1-123-356-00	ELECT	10MF	20%	50V
C404	1-101-005-00	CERAMIC	0.022MF		50V
C405	1-101-005-00	CERAMIC	0.022MF		50V
C407	1-162-215-31	CERAMIC	47PF	5%	50V
C408	1-161-494-00	CERAMIC	0.022MF	30%	25V
C409	1-162-294-31	CERAMIC	0.001MF	10%	50V
C410	1-130-487-00	MYLAR	0.022MF	5%	50V
C411	1-101-005-00	CERAMIC	0.022MF		50V
C412	1-101-005-00	CERAMIC	0.022MF		50V
C413	1-162-306-31	CERAMIC	0.01MF	20%	16V
C414	1-101-005-00	CERAMIC	0.022MF		50V
C415	1-123-379-00	ELECT	0.47MF	20%	50V
C416	1-123-332-00	ELECT	47MF	20%	16V
C417	1-123-382-00	ELECT	3.3MF	20%	50V
C418	1-123-369-00	ELECT	4.7MF	20%	50V
C419	1-123-382-00	ELECT	3.3MF	20%	50V
C420	1-101-005-00	CERAMIC	0.022MF		50V
C421	1-162-306-31	CERAMIC	0.01MF	20%	16V
C422	1-161-494-00	CERAMIC	0.022MF	30%	25V
C423	1-101-005-00	CERAMIC	0.022MF		50V
C424	1-102-949-00	CERAMIC	12PF	5%	50V
C425	1-102-880-00	CERAMIC	15PF	5%	50V
C426	1-104-069-00	POLYSTYRENE	470PF	5%	50V
C427	1-101-005-00	CERAMIC	0.022MF		50V
C428	1-102-803-00	CERAMIC	27PF	5%	50V
C429	1-103-741-00	STYROL	0.0047MF	5%	50V
C430	1-101-005-00	CERAMIC	0.022MF		50V
C431	1-102-942-00	CERAMIC	5PF	5%	50V
C432	1-101-005-00	CERAMIC	0.022MF		50V
C433	1-101-005-00	CERAMIC	0.022MF		50V
C434	1-101-005-00	CERAMIC	0.022MF		50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C435	1-102-754-00	CERAMIC	39PF	5%	50V
C436	1-130-484-00	MYLAR	0.012MF	5%	50V
C437	1-101-005-00	CERAMIC	0.022MF		50V
C438	1-101-005-00	CERAMIC	0.022MF		50V
C439	1-101-005-00	CERAMIC	0.022MF		50V
C440	1-101-005-00	CERAMIC	0.022MF		50V
C441	1-101-005-00	CERAMIC	0.022MF		50V
C443	1-101-005-00	CERAMIC	0.022MF		50V
C444	1-101-005-00	CERAMIC	0.022MF		50V
C445	1-101-005-00	CERAMIC	0.022MF		50V
C446	1-101-005-00	CERAMIC	0.022MF		50V
C447	1-123-381-00	ELECT	2.2MF	20%	50V
C448	1-123-380-00	ELECT	1MF	20%	50V
C449	1-123-380-00	ELECT	1MF	20%	50V
C501	1-101-005-00	CERAMIC	0.022MF		50V
C502	1-123-333-00	ELECT	100MF	20%	16V
C503	1-101-005-00	CERAMIC	0.022MF		50V
C504	1-123-307-00	ELECT	100MF	20%	10V
C505	1-101-005-00	CERAMIC	0.022MF		50V
C506	1-101-005-00	CERAMIC	0.022MF		50V
C601	1-101-005-00	CERAMIC	0.022MF		50V
C602	1-123-307-00	ELECT	100MF	20%	10V
C603	1-102-852-00	CERAMIC	47PF	5%	50V
C604	1-102-852-00	CERAMIC	47PF	5%	50V
C605	1-123-380-00	ELECT	1MF	20%	50V
C606	1-101-005-00	CERAMIC	0.022MF		50V
C607	1-162-306-31	CERAMIC	0.01MF	20%	16V
C608	1-101-005-00	CERAMIC	0.022MF		50V
C609	1-123-356-00	ELECT	10MF	20%	50V
C610	1-101-005-00	CERAMIC	0.022MF		50V
C611	1-123-332-00	ELECT	47MF	20%	16V
C612	1-136-171-00	FILM	0.33MF	5%	50V
C613	1-130-487-00	MYLAR	0.022MF	5%	50V
C614	1-123-609-00	ELECT	0.33MF	20%	50V
C615	1-136-171-00	FILM	0.33MF	5%	50V
C616	1-130-487-00	MYLAR	0.022MF	5%	50V
C617	1-123-607-00	ELECT	0.1MF	20%	50V
C630	1-162-294-31	CERAMIC	0.001MF	10%	50V
C631	1-101-005-00	CERAMIC	0.022MF		50V
C632	1-101-005-00	CERAMIC	0.022MF		50V
C633	1-101-005-00	CERAMIC	0.022MF		50V
C634	1-161-494-00	CERAMIC	0.022MF	30%	25V
C635	1-101-006-00	CERAMIC	0.047MF		50V
CF201	1-527-968-00	FILTER, CERAMIC			
CF202	1-527-968-00	FILTER, CERAMIC			
CF401	1-527-937-00	FILTER, CERAMIC			
CF402	1-527-981-00	FILTER, CERAMIC			
CNJ101	*1-562-327-00	SOCKET, CONNECTOR 3P			
CNJ201	*1-560-060-00	PIN, CONNECTOR 2P (NULL CHECK POINT)			
CNJ301	1-562-479-12	SOCKET, CONNECTOR 10P			
CNJ601	*1-560-604-00	PIN, CONNECTOR 5P			
CNJ602	*1-560-602-00	PIN, CONNECTOR 3P			
CNJ603	*1-560-603-00	PIN, CONNECTOR 4P			
CT401	1-141-227-00	CAP, CERAMIC TRIMMER			
CT402	1-141-227-00	CAP, CERAMIC TRIMMER			
CT403	1-141-227-00	CAP, CERAMIC TRIMMER			
CT404	1-141-227-00	CAP, CERAMIC TRIMMER			
CT405	1-141-227-00	CAP, CERAMIC TRIMMER			
CT406	1-141-227-00	CAP, CERAMIC TRIMMER			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D101	8-719-918-45	DIODE KV1310
D102	8-719-918-45	DIODE KV1310
D103	8-719-918-45	DIODE KV1310
D105	8-719-107-94	DIODE 1SS202-1
D201	8-719-107-94	DIODE 1SS202-1
D202	8-719-107-94	DIODE 1SS202-1
D301	8-719-904-08	DIODE SLH54VC3
D302	8-719-107-94	DIODE 1SS202-1
D303	8-719-107-94	DIODE 1SS202-1
D304	8-719-107-94	DIODE 1SS202-1
D401	8-719-107-94	DIODE 1SS202-1
D402	8-719-902-79	DIODE KV1236Z
D403	8-719-902-79	DIODE KV1236Z
D404	8-719-903-27	DIODE 1SS168
D405	8-719-903-27	DIODE 1SS168
D406	8-719-903-27	DIODE 1SS168
D407	8-719-903-27	DIODE 1SS168
D408	8-719-903-27	DIODE 1SS168
D409	8-719-903-27	DIODE 1SS168
D410	8-719-903-27	DIODE 1SS168
D411	8-719-903-27	DIODE 1SS168
D412	8-719-903-27	DIODE 1SS168
D413	8-719-903-27	DIODE 1SS168
D414	8-719-903-27	DIODE 1SS168
D415	8-719-903-27	DIODE 1SS168
D416	8-719-903-27	DIODE 1SS168
D417	8-719-903-27	DIODE 1SS168
D418	8-719-903-27	DIODE 1SS168
D421	8-719-903-27	DIODE 1SS168
D422	8-719-107-94	DIODE 1SS202-1
D501	8-719-910-23	DIODE HZ12A3L
D502	8-719-910-64	DIODE HZ6B1L
D601	8-719-107-94	DIODE 1SS202-1
D602	8-719-107-94	DIODE 1SS202-1
D603	8-719-107-94	DIODE 1SS202-1
D604	8-719-107-94	DIODE 1SS202-1
D605	8-719-107-94	DIODE 1SS202-1
D606	8-719-107-94	DIODE 1SS202-1
D607	8-719-107-94	DIODE 1SS202-1
D608	8-719-107-94	DIODE 1SS202-1
D609	8-719-107-94	DIODE 1SS202-1
D610	8-719-107-94	DIODE 1SS202-1
D611	8-719-107-94	DIODE 1SS202-1
D612	8-719-107-94	DIODE 1SS202-1
D613	8-719-107-94	DIODE 1SS202-1
D614	8-719-107-94	DIODE 1SS202-1
D615	8-719-107-94	DIODE 1SS202-1
D616	8-719-107-94	DIODE 1SS202-1
D617	8-719-107-94	DIODE 1SS202-1
IC201	8-759-812-31	IC LA1231
IC301	8-759-801-80	IC LA3401
IC401	8-759-812-45	IC LA1245
IC601	8-759-204-24	IC TC9302F-005
IC602	8-759-202-63	IC TC9172P
L101	*1-422-214-11	COIL, AIR-CORE
L102	*1-422-040-00	COIL, AIR-CORE
L103	*1-422-081-00	COIL (WITH CORE)
L104	*1-422-039-00	COIL, AIR-CORE

ELECTRICAL PARTS

Ref.No.	Part No.	Description
L105	*1-459-396-00	COIL (WITH CORE)
L301	1-408-924-00	MICRO INDUCTOR 10MMH
L302	1-408-924-00	MICRO INDUCTOR 10MMH
L401	1-402-152-11	ANTENNA, FERRITE-ROD (MW)
L402	1-406-089-11	COIL (OSC)
L403	1-405-955-00	COIL (OSC)
L404	1-406-106-11	COIL (OSC) SW2
L405	1-401-910-00	COIL (ANT)
L406	1-401-985-00	COIL (ANT)
L407	1-408-202-00	MICRO INDUCTOR 390UH
L408	1-408-202-00	MICRO INDUCTOR 390UH
L409	1-408-196-00	MICRO INDUCTOR 120UH
L410	1-408-202-00	MICRO INDUCTOR 390UH
L411	1-408-202-00	MICRO INDUCTOR 390UH
L412	1-408-202-00	MICRO INDUCTOR 390UH
L413	1-408-551-00	MICRO INDUCTOR 1UH
L414	1-408-202-00	MICRO INDUCTOR 390UH
LCD1	1-806-874-11	INDICATOR, L-CRYSTAL LT5056
PL501	1-518-511-21	LAMP, PILOT, YELLOW
Q101	8-729-353-52	TRANSISTOR 2SC535
Q102	8-729-353-52	TRANSISTOR 2SC535
Q103	8-729-672-42	TRANSISTOR 2SC2724-C
Q104	8-729-672-42	TRANSISTOR 2SC2724-C
Q201	8-729-672-42	TRANSISTOR 2SC2724-C
Q301	8-729-606-33	TRANSISTOR 2SC2603-F
Q302	8-729-606-33	TRANSISTOR 2SC2603-F
Q303	8-729-900-63	TRANSISTOR DTA124ES
Q304	8-729-900-36	TRANSISTOR DTC124ES
Q305	8-729-900-36	TRANSISTOR DTC124ES
Q401	8-729-606-33	TRANSISTOR 2SC2603-F
Q501	8-729-288-02	TRANSISTOR 2SD880
Q502	8-729-224-61	TRANSISTOR 2SK246-Y
Q601	8-729-201-56	TRANSISTOR 2SK246-GR2
Q602	8-729-606-33	TRANSISTOR 2SC2603-F
Q603	8-729-201-56	TRANSISTOR 2SK246-GR2
Q604	8-729-606-33	TRANSISTOR 2SC2603-F
Q605	8-729-900-36	TRANSISTOR DTC124ES
Q606	8-729-900-63	TRANSISTOR DTA124ES
Q607	8-729-900-63	TRANSISTOR DTA124ES
Q608	8-729-900-36	TRANSISTOR DTC124ES
Q609	8-729-900-63	TRANSISTOR DTA124ES
Q610	8-729-900-36	TRANSISTOR DTC124ES
Q611	8-729-900-63	TRANSISTOR DTA124ES
Q612	8-729-900-36	TRANSISTOR DTC124ES
Q613	8-729-900-63	TRANSISTOR DTA124ES
Q614	8-729-606-33	TRANSISTOR 2SC2603-F
Q615	8-729-900-36	TRANSISTOR DTC124ES
R101	1-249-441-11	CARBON 100K 5% 1/6W
R102	1-247-901-00	CARBON 820K 5% 1/6W
R103	1-249-405-11	CARBON 100 5% 1/6W
R104	1-249-405-11	CARBON 100 5% 1/6W
R105	1-249-441-11	CARBON 100K 5% 1/6W
R106	1-247-901-00	CARBON 820K 5% 1/6W
R107	1-247-819-00	CARBON 330 5% 1/6W
R108	1-247-795-00	CARBON 33 5% 1/6W
R109	1-249-405-11	CARBON 100 5% 1/6W
R110	1-247-893-00	CARBON 390K 5% 1/6W
R111	1-249-425-11	CARBON 4.7K 5% 1/6W
R112	1-247-859-00	CARBON 15K 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description				
R113	1-247-893-00	CARBON	390K	5%	1/6W	
R114	1-249-405-11	CARBON	100	5%	1/6W	
R115	1-247-799-00	CARBON	47	5%	1/4W	F
R201	1-247-901-00	CARBON	820K	5%	1/6W	
R202	1-247-819-00	CARBON	330	5%	1/6W	
R203	1-247-819-00	CARBON	330	5%	1/6W	
R204	1-247-873-00	CARBON	56K	5%	1/6W	
R205	1-247-831-00	CARBON	1K	5%	1/6W	
R206	1-247-859-00	CARBON	15K	5%	1/6W	
R207	1-249-433-11	CARBON	22K	5%	1/6W	
R208	1-247-799-00	CARBON	47	5%	1/4W	
R209	1-247-859-00	CARBON	15K	5%	1/6W	
R210	1-249-441-11	CARBON	100K	5%	1/6W	
R211	1-249-429-11	CARBON	10K	5%	1/6W	
R301	1-247-799-00	CARBON	47	5%	1/6W	
R302	1-249-423-00	CARBON	3.3K	5%	1/6W	
R303	1-249-435-11	CARBON	33K	5%	1/6W	
R304	1-247-833-00	CARBON	1.2K	5%	1/6W	
R305	1-249-437-11	CARBON	47K	5%	1/6W	
R306	1-249-437-11	CARBON	47K	5%	1/6W	
R307	1-249-419-11	CARBON	1.5K	5%	1/6W	
R308	1-249-419-11	CARBON	1.5K	5%	1/6W	
R309	1-249-429-11	CARBON	10K	5%	1/6W	
R310	1-249-429-11	CARBON	10K	5%	1/6W	
R312	1-249-437-11	CARBON	47K	5%	1/6W	
R313	1-247-831-00	CARBON	1K	5%	1/6W	
R314	1-249-437-11	CARBON	47K	5%	1/6W	
R316	1-249-437-11	CARBON	47K	5%	1/6W	
R319	1-249-437-11	CARBON	47K	5%	1/6W	
R320	1-249-437-11	CARBON	47K	5%	1/6W	
R322	1-249-437-11	CARBON	47K	5%	1/6W	
R330	1-247-853-00	CARBON	8.2K	5%	1/6W	
R401	1-249-421-11	CARBON	2.2K	5%	1/6W	
R402	1-249-405-11	CARBON	100	5%	1/6W	
R403	1-247-825-00	CARBON	560	5%	1/6W	
R404	1-249-423-00	CARBON	3.3K	5%	1/6W	
R405	1-247-799-00	CARBON	47	5%	1/6W	
R406	1-249-429-11	CARBON	10K	5%	1/6W	
R407	1-249-405-11	CARBON	100	5%	1/6W	
R408	1-249-429-11	CARBON	10K	5%	1/6W	
R409	1-247-811-00	CARBON	150	5%	1/6W	
R410	1-249-429-11	CARBON	10K	5%	1/6W	
R411	1-249-429-11	CARBON	10K	5%	1/6W	
R412	1-247-859-00	CARBON	15K	5%	1/6W	
R413	1-249-433-11	CARBON	22K	5%	1/6W	
R414	1-249-429-11	CARBON	10K	5%	1/6W	
R415	1-249-429-11	CARBON	10K	5%	1/6W	
R418	1-247-857-00	CARBON	12K	5%	1/6W	
R419	1-249-429-11	CARBON	10K	5%	1/6W	
R420	1-249-429-11	CARBON	10K	5%	1/6W	
R421	1-247-857-00	CARBON	12K	5%	1/6W	
R422	1-247-851-00	CARBON	6.8K	5%	1/6W	
R423	1-247-825-00	CARBON	560	5%	1/6W	
R424	1-247-857-00	CARBON	12K	5%	1/6W	
R425	1-247-857-00	CARBON	12K	5%	1/6W	
R426	1-247-857-00	CARBON	12K	5%	1/6W	
R427	1-247-857-00	CARBON	12K	5%	1/6W	

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R428	1-247-857-00	CARBON	12K	5%	1/6W
R429	1-247-857-00	CARBON	12K	5%	1/6W
R430	1-247-857-00	CARBON	12K	5%	1/6W
R431	1-247-857-00	CARBON	12K	5%	1/6W
R439	1-249-429-11	CARBON	10K	5%	1/6W
R440	1-247-857-00	CARBON	12K	5%	1/6W
R441	1-247-879-00	CARBON	100K	5%	1/6W
R501	1-247-815-00	CARBON	220	5%	1/6W
R502	1-247-823-00	CARBON	470	5%	1/6W
R503	1-247-775-00	CARBON	4.7	5%	1/6W
R504	1-247-831-00	CARBON	1K	5%	1/6W
R601	1-249-425-11	CARBON	4.7K	5%	1/6W
R602	1-249-441-11	CARBON	100K	5%	1/6W
R603	1-249-435-11	CARBON	33K	5%	1/6W
R604	1-249-423-11	CARBON	3.3K	5%	1/6W
R605	1-249-441-11	CARBON	100K	5%	1/6W
R606	1-249-435-11	CARBON	33K	5%	1/6W
R607	1-247-797-00	CARBON	39	5%	1/6W
R608	1-247-799-00	CARBON	47	5%	1/6W
R609	1-249-437-11	CARBON	47K	5%	1/6W
R610	1-247-817-00	CARBON	270	5%	1/6W
R611	1-247-829-00	CARBON	820	5%	1/6W
R612	1-247-825-00	CARBON	560	5%	1/6W
R613	1-249-435-11	CARBON	33K	5%	1/6W
R614	1-249-421-11	CARBON	2.2K	5%	1/6W
R615	1-249-425-11	CARBON	4.7K	5%	1/6W
R616	1-249-425-11	CARBON	4.7K	5%	1/6W
R617	1-249-437-11	CARBON	47K	5%	1/6W
R618	1-247-817-00	CARBON	270	5%	1/6W
R619	1-247-829-00	CARBON	820	5%	1/6W
R620	1-247-825-00	CARBON	560	5%	1/6W
R621	1-249-435-11	CARBON	33K	5%	1/6W
R622	1-249-421-11	CARBON	2.2K	5%	1/6W
R623	1-249-425-11	CARBON	4.7K	5%	1/6W
R624	1-249-425-11	CARBON	4.7K	5%	1/6W
R625	1-247-891-00	CARBON	330K	5%	1/6W
R640	1-249-435-11	CARBON	33K	5%	1/6W
R643	1-249-441-11	CARBON	100K	5%	1/6W
R644	1-249-425-11	CARBON	4.7K	5%	1/6W
RV201	1-228-997-00	RES, ADJ, CARBON 100K			
RV301	1-228-998-00	RES, ADJ, CARBON 220K			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S701	1-554-303-21	SWITCH, KEY BOARD (BAND)
S702	1-554-303-21	SWITCH, KEY BOARD (STEREO MUTING)
S703	1-554-303-21	SWITCH, KEY BOARD (MEMORY)
S704	1-554-303-21	SWITCH, KEY BOARD (TUNING -)
S705	1-554-303-21	SWITCH, KEY BOARD (TUNING +)
S706	1-554-303-21	SWITCH, KEY BOARD (PRESET 1)
S707	1-554-303-21	SWITCH, KEY BOARD (PRESET 2)
S708	1-554-303-21	SWITCH, KEY BOARD (PRESET 3)
S709	1-554-303-21	SWITCH, KEY BOARD (PRESET 4)
S710	1-554-303-21	SWITCH, KEY BOARD (PRESET 5)
T201	1-404-419-00	COIL, DISCRIMINATOR
T401	1-404-535-11	COIL (WITH IFT)
TM101	1-536-901-11	TERMINAL BOARD 3P (ANTENNA)
X301	1-567-250-11	OSCILLATOR, CERAMIC
X601	1-567-125-00	VIBRATOR, CRYSTAL